

Dakota State University Beadle Scholar

Faculty Research & Publications

College of Business and Information Systems

2017

A Framework for Profiling Prospective Students in Higher Education

Santhosh Kumar Lakkaraju
Dakota State University

Deb Tech
Dakota State University

Shuyuan Deng
Dakota State University

Follow this and additional works at: <https://scholar.dsu.edu/bispapers>

Recommended Citation

Lakkaraju, Santhosh Kumar; Tech, Deb; and Deng, Shuyuan, "A Framework for Profiling Prospective Students in Higher Education" (2017). *Faculty Research & Publications*. 7.
<https://scholar.dsu.edu/bispapers/7>

This Article is brought to you for free and open access by the College of Business and Information Systems at Beadle Scholar. It has been accepted for inclusion in Faculty Research & Publications by an authorized administrator of Beadle Scholar. For more information, please contact repository@dsu.edu.

A Framework for Profiling Prospective Students in Higher Education

H

Santhosh Kumar Lakkaraju
Dakota State University, USA

Deb Tech
Dakota State University, USA

Shuyuan Deng
Dakota State University, USA

INTRODUCTION

Prospective student acquisition is a prominent issue in higher education marketing. Noel-Levitz (2012) estimated that higher education institutions are losing as high as 75% of the prospects after receiving an inquiry. Another study reported that 80% of the students who decide to apply to a program were influenced by the post-inquiry communications they had received from the higher education institutions (Aarinen, 2012). This chapter attempts to study the underlying concepts from literature and design a framework to extract prospective student profiles and further extend a discussion on how these profiles can be used to address the prospect engagement.

BACKGROUND

In general, the consumer buying decision-making process consists of five different phases that drive potential shoppers throughout their purchase process. Kotler & Armstrong (2006) defined the five consumer buying decision-making phases as Need Recognition, Information Search, Evaluation of Alternatives, Making a Decision and Post Purchase Behavior. The higher education institutions tackle these consumer buying decision-making phases through the four phases of the admission funnel. The admission funnel primarily consists of the

awareness, inquiry, and application and admissions phases as shown in Figure 1.

The awareness phase involves different marketing techniques the institutions rely on to reach out to prospects. The awareness phase will address the need recognition and information search phases by providing relevant information on the institutional websites. During the inquiry phase, a prospect tends to look for potential information on the institutional website and makes an inquiry by filling out the inquiry form. The institution responds to those inquiries by sending out different kinds of communications to prospects. These communications play a critical role in helping prospects to make a decision to apply or not.

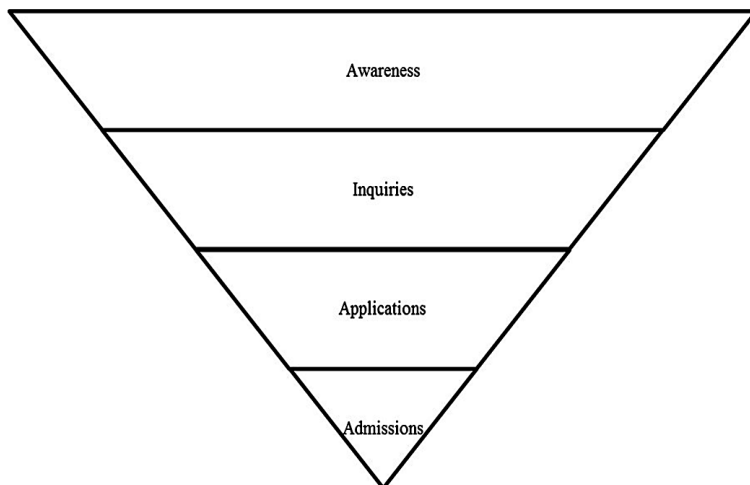
The inquiry phase primarily targets the evaluation of alternatives and making a decision phases.

In the application phase, the institutions receive an application from the prospect. The cycle ends with the admission phase where the prospect would receive a decision on the application from the Institution.

To better market themselves and increase their student population, higher education institutions are employing different techniques like online (or) pay per click marketing and print media to increase their local and global presence and, social media to increase their social presence as well as brand awareness. Because of this exponentially growing educational market and varying prospective student behavior, institutions are receiving a

DOI: 10.4018/978-1-5225-2255-3.ch335

Figure 1. Admission Funnel



large number of inquiries from prospects about a specific program than the actual enrollments into that program (Hemsley-Brown & Oplatka, 2006; Moogan, 2011; Morris, 2009).

Earlier studies investigated several key decision-making variables of a prospective student (Aarinen, 2012; Moogan, Baron, & Harris, 1999; Moogan, 2011; Schäfer & Kummer, 2013), and some studies investigated the current student demographics to predict prospective student enrollment (Desjardins, 2002; Goenner & Pauls, 2006; Tareef & Balas, 2009). Other research studies developed predictive models using prospective student geo-demographic information collected through the online inquiries and estimated the prospective student enrollment rates (Goenner & Pauls, 2006; Michael, 1990; Morris, 2009). However, most of the online inquiries that educational institutions receive are incomplete, which will eventually provide incorrect predictions (Dupaul, 2010).

Moogan (2011) articulated that due to the lack of awareness about the kind of information a prospective student might be interested in receiving during the decision-making period, many educational institutions are losing potential prospects. The prospects tend to look for information before and after making the inquiry. The information accessed before making an inquiry is considered

as pre-inquiry navigational behavior and the information accessed after making an inquiry is considered as post-inquiry navigational behavior.

In general, profiling can be defined as the recording and analysis of an individual's psychological and behavioral characteristics (Nicoletti, Schiaffino, & Godoy, 2013). Building prospective student profiles is a complex task, as prospects do not usually give away explicit information about their interests (Catherine Bounsaythip, 2001; Srivastava, Cooley, Deshpande, & Tan, 2000). Therefore, the prospective student interests must be mined implicitly from the web server logs. Constructing accurate and comprehensive customer profiles play a key role in target marketing and enhanced customer engagement (Adomavicius & Alexander, 2001; Crossley, Kings, & Scott, 2003; Nicoletti et al., 2013).

Constructing prospective student profiles begin with collecting the prospect's information from various sources like online inquiry forms, campus visits, information brochures, educational fairs and job fairs. From a prospective student perspective, the general educational purchase process can be described in four phases: general interest in higher education, research for a specific institution or program of interest, decision to apply for one or more schools and finally, making a decision to enroll in a specific program (Goenner & Pauls, 2006).

From a higher education institution perspective, the general educational sales and marketing funnel or the admission funnel shown in Figure 1 has four distinct stages: awareness, inquiries, applications and admissions (Kotler & Armstrong, 2006; Nicolescu, 2009; Noel-Levitz, 2012; Oplatka & Hemsley-Brown, 2004). A prospect browses through different pages within an institutional website leaving trails of navigational information that can be mined from the server logs. This navigational behavior will be used in the extraction of prospective student profiles. Profiling prospective students based on their priorities would help in channeling a prospect to specific communications and increase satisfaction (Bhate & Pasha, 2014). It is proposed that prospective students' priorities can be identified from the prospect's existing browsing activities using pre-inquiry and post-inquiry navigational information.

Desjardins (2002) implemented an analytical strategy to assist higher education institutional marketing efforts. Desjardins (2002) applied a conceptual model based on the human capital theory that considered variables like current student demographics, admitted years, enrolled programs, application forms etc. Desjardins (2002) attempted to fit a statistical model by considering the historical data of admitted students and tried to accurately predict enrollment. Following this work, Goenner & Pauls (2006) proposed a model to predict the enrollment decisions of prospective students based on their inquiries. Goenner & Pauls (2006) combined the prospective student demographics with US census data and proposed that the prospects from a specific geographic region behave in a specific pattern.

Goenner & Pauls (2006) & Desjardins (2002) predicted a prospect's enrollment decision and then suggested specific marketing communications channels for prospective students, current students, and alumni. Moogan, (2011) specified that customer specific information in the communications chain might improve the retention rates as well as the brand image of the institution.

He also articulated that the prospects are to be considered as valuable customers and complete effective communications are to be exchanged between the prospects. Such relationship needs to be established from the inquiry phase till his/her graduation from the program. According to Moogan (2011), most of the existing research was conducted before or in the early stages of the evolution of online marketing and do not reflect the current marketing technologies to match the information needs of the students.

This chapter attempts to generate a dialog of ongoing higher education marketing efforts and the contribute to the institutional advancement by making use of analytics.

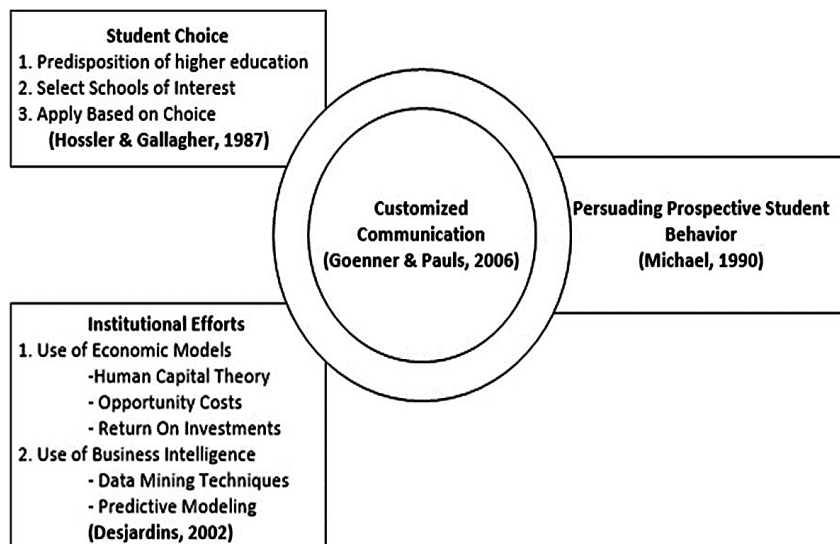
MAIN FOCUS OF THE CHAPTER

This chapter focuses on a comprehensive review of existing higher education marketing literature and extracts a theoretical model. This theoretical model is further used in formulating the framework to profile prospective students.

THEORETICAL MODEL

The theoretical model is derived from the works of Desjardins, (2002); Goenner & Pauls, (2006); Hossler & Gallagher, (1987); Michael, (1990). Hossler & Gallagher, (1987) articulated that a student's choice of an institution depends on the predisposition of pursuing higher education, selecting schools of interest and apply to the institutions based on choice. Desjardins, (2002) articulated that higher education institutions tend to make use of economic models and business intelligence models in promoting marketing methods and reporting. Goenner & Pauls, (2006) developed a model that made use of the prospect demographic and financial information extracted from the applications and predicted the enrollment numbers. Michael, (1990) emphasized on different factors that influence the prospects behavior from choosing one university over the other.

Figure 2. Theoretical model derived from literature



The theoretical model shown in Figure 2 illustrates the interdependency of the student choice in researching for potential schools in the market as well as the institutional efforts in capturing the prospective student’s attention through their communications. This prospective student information can be further mined and used to personalize and customize the communications that have a direct impact on persuading prospective students. According to Oinas-kukkonen & Harjumaa, (2009), information tailored to the potential needs of a prospect or to the interests and personality of a prospect will be more persuasive. From the theoretical model, it is clear that student choice, institutional efforts and the communications that a prospect receives will persuade a prospective student’s decision-making behavior.

PROSPECT DECISION-MAKING FACTORS

There are different factors that contribute to a prospect’s decision in selecting a graduate program in an educational institution. Extensive research has been done in identifying different decision-making factors of a prospective student (Moogan et al., 1999; Moogan, 2011; Sheppard, 2013).

Moogan (2011) analyzed the decision-making criteria of new undergraduates enrolling in terms of marketing techniques employed throughout the decision-making period.

Sheppard (2013) investigated different factors that influence prospective students in decision-making and the aggregated analysis is provided in the following table. A survey instrument was developed by Sheppard, (2013) that addressed six different aspects namely: external influences, education and career goals, information gathering, university financial aid, program characteristics and university characteristics. Noel-Levitz (2012) conducted a survey to extract different factors that influence graduate student college choice. The results varied from online versus regional prospects. Different key prospective student decision-making factors identified from the literature are articulated in Table 1.

The decision-making factors in table 1 have provided this study a foundational reference. The following section provides an overview on the translation of the decision-making factors into prospect profiles based on their contextual relevance.

Table 1. Key prospective student decision-making factors

Author	Decision-Making Factors
(Aarinen, 2012; María Cubillo, Sánchez, & Cerviño, 2006)	International recognition, suitability, reputation, specialization, quality of the program, courses, future earnings, future job or career opportunities, admission requirements, language requirements, educational facilities, fee, financial aid, City image, institution size.
(Moogan, 2011)	Teaching quality, course content, university reputation, research quality, faculty reputation, accreditation, facilities, student life, career prospects, entry dates, open day, the cost of living, accommodation, friends and family opinion, teacher's opinion, distance from home.
(Morris, 2009)	Electronic catalog, electronic application, inquiry forms, financial aid forms, course registration, email correspondence are some of the key decision-making factors
(Sheppard, 2013)	Program availability, career goals, income, credentials, personal development, flexibility of class scheduling, location, cost of attendance, reputation

FRAMEWORK

Different decision-making factors identified from literature (Aarinen, 2012; María Cubillo et al., 2006; Moogan, 2011; Morris, 2009; Sheppard, 2013) spoke about the factors consisting of specific contextual information. These decision-making factors are categorized into five different prospect profiles namely: price, program, future employment, institutional image, and the environment. This categorization is done based on their contextual relevance as shown in the framework below in Figure 3.

From Table 1, the factors cost of attendance, financial aid availability and cost of living provide information related to price.

The factors availability of the program, online, part-time, distance, location, and flexibility of class schedules provide program related information to the prospects.

The factors career advancements and goals, course content, future jobs, future earnings and on-campus employment provide a prospect with future employment related information.

The factors institutional Reputation, teaching quality, faculty expertise and reputation, research quality, quality of the program and institutional provide the prospect with an institutional image related information.

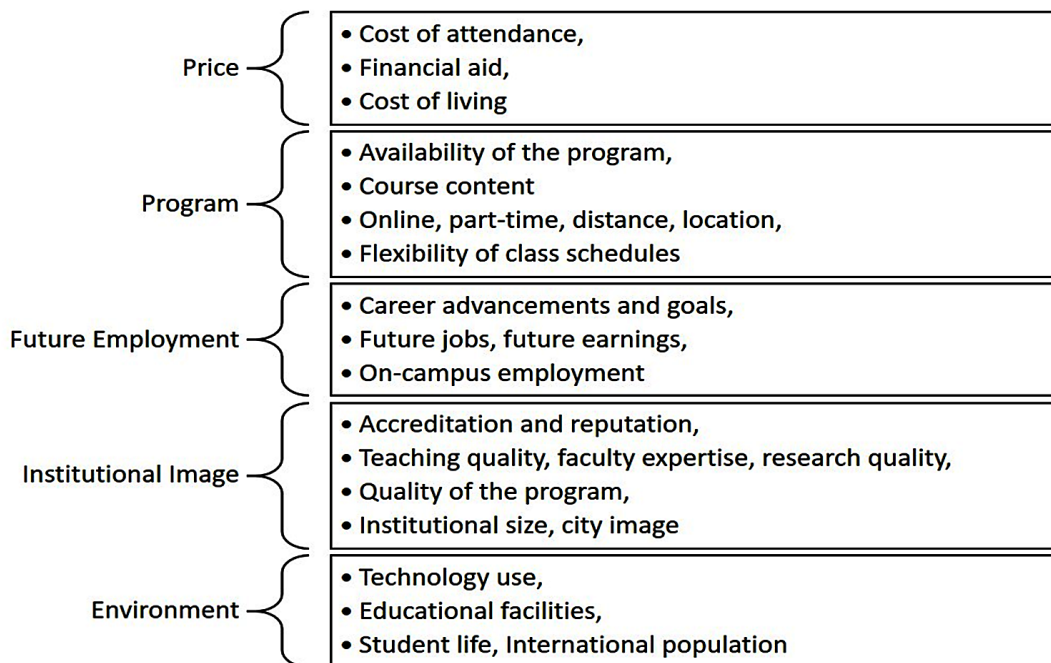
The factors technology use, educational facilities, and student life provide the prospect with the environment related information.

Institutions provide specific information addressing the decision-making factors on their websites. Based on these prospect profiles the web pages within the institutional website are categorized into different content profiles. Pages that address a specific context are tagged with prospect profile names based on the context as followed: Price, Program, Future employment, Institutional Image and Environment.

IMPORTANCE OF PROSPECT PROFILES

This section provides an overview of crucial decision-making factors and their importance in this research. Extensive study has been conducted on identifying different influential factors that impact a prospect's choice of an institution or program. Ivy & Naude, (2004) introduced a 5P model where the 5P's stands for product, price, place, promotion and people. In a detailed sense, the product represents the program a prospect is going to invest his money on; price represents the cost of the program, place deals with the environment or location of the institution, promotion targets the future employment and people deals with the student life and institutional image. Filip, (2012) proposed a 7P model and included processes and physical facilities to the existing 5Ps. Processes refer to the way the enrollment system, teaching and learning habits, social and sports activities are established within the institution. Physical facili-

Figure 3. Framework representing the prospect profiles



ties address the institutional equipment, technical infrastructure etc.

Although it is up to an institution to target specific factors in reaching out to prospects, a research study conducted by Noel-Levitz, (2012) clearly articulated that cost, financial aid, academic reputation, institutional size, future employment and campus location are crucial prospect decision-making factors. Higher education institutions usually structure their program-related information targeting these specific decision-making factors on their websites.

SOLUTIONS AND FUTURE RESEARCH DIRECTIONS

This framework can be used along with analytical models to optimize prospect communications, provide timely and relevant information to the prospects. This framework can act as a foundational reference for accurately profile prospects. The prospect profiling framework is designed by relying on the existing literature.

With the increasing use of social media by the prospects, institutions are trying to expand their reputation and social presence by investing valuable resources in social media. There might be some unknown variables that may act as decision-making factors for prospects in choosing one institution over the other. In the future, this study can be extended in extracting prospect preferences and decision-making factors on institutional social profiles.

CONCLUSION

This chapter provided an overview of the existing higher education marketing literature and extracted different prospect decision-making factors. These decision-making factors are further translated into prospect profiles based on their contextual relevance. The prospect profiles from the framework can be used in the institutional marketing strategies to optimize the prospect communications, identify prospect behavior over the institutional website and optimize the web pages accordingly.

ACKNOWLEDGMENT

We would like to sincerely thank all the reviewers for their inputs and suggestions. The chapter is intended for audience from higher education marketing. Different profiles extracted from the literature intend to bring a conceptual awareness in the marketing departments to find different ways to target their prospects and address their needs. The chapter has been modified in accordance with the reviewers suggestions and we also appreciate the reviewers for the time spent on this chapter.

REFERENCES

- Aarinen, A. (2012). *University Websites As Facilitators Of International Student Decision Making*. Academic Press.
- Adomavicius, G., & Alexander, T. (2001). Using Data Mining Methods to Build Customer Profiles. *IEEE Computer*, 74–82.
- Bhate, D. V., & Pasha, M. Y. (2014). Analyzing Target Customer Behavior Using Data Mining Techniques for E- Commerce Data. *International Journal of Innovative Research in Computer Science & Technology*, 2(1), 16–19.
- Catherine Bounsaythip, E. R.-R. (2001). *Overview of Data Mining for Customer Behavior Modeling*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.22.3279>
- Crossley, M., Kings, N. J., & Scott, J. R. (2003). Profiles — Analysis and Behaviour. *BT Technology Journal*, 21(1), 56–66. doi:10.1023/A:1022404310934
- Desjardins, S. L. (2002). An Analytic Strategy To Assist Institutional Recruitment And Marketing Efforts. *Research in Higher Education*, 43(5), 531–553. doi:10.1023/A:1020162014548
- Dupaul, S. (2010). *Understanding The Behaviors of Stealth Applicants In The College Search Process*. Academic Press.
- Filip, A. (2012). Marketing theory applicability in higher education. *Procedia: Social and Behavioral Sciences*, 46, 912–916. doi:10.1016/j.sbspro.2012.05.223
- Goenner, C. F., & Pauls, K. (2006). A Predictive Model of Inquiry to Enrollment. *Research in Higher Education*, 47(8), 935–956. doi:10.1007/s11162-006-9021-8
- Hemsley-Brown, J., & Oplatka, I. (2006). Universities in a Competitive Global Marketplace: A Systematic Review of The Literature on Higher Education Marketing. *International Journal of Public Sector Management*, 19(4), 316–338. doi:10.1108/09513550610669176
- Hossler, D., & Gallagher, K. S. (1987). Studying student college choice: A three-phase model and the implications for policymakers. *College and University*, 62(3), 207–221.
- Ivy, J., & Naude, P. (2004). Succeeding in the MBA Marketplace: Identifying the Underlying Factors. *Journal of Higher Education Policy and Management*, 26(3), 401–417. doi:10.1080/1360080042000290249
- Kotler, P., & Armstrong, G. (2006). *Principles of Marketing*. Academic Press.
- María Cubillo, J., Sánchez, J., & Cerviño, J. (2006). International students decision-making process. *International Journal of Educational Management*, 20(2), 101–115. doi:10.1108/09513540610646091
- Michael, B. P. (1990). College Choice: Understanding Student Enrollment Behavior. ASHE - ERIC Higher Education Report No.6.

- Moogan, Y. J. (2011). Can a Higher Education Institutions Marketing Strategy Improve the Student-Institution Match? *International Journal of Educational Management*, 25(6), 570–589. doi:10.1108/09513541111159068
- Moogan, Y. J., Baron, S., & Harris, K. (1999). Decision-Making Behaviour of Potential Higher Education Students. *Higher Education Quarterly*, 53(3), 211–228. doi:10.1111/1468-2273.00127
- Morris, C. G. (2009). *Prospective Student Interaction and Engagement with the College : Linking Timeliness to Enrollment Likelihood*. Academic Press.
- Nicolescu, L. (2009). Applying Marketing to Higher Education: Scope and Limits. *Management & Marketing*, 4(2), 35–44.
- Nicoletti, M., Schiaffino, S., & Godoy, D. (2013). Mining interests for user profiling in electronic conversations. *Expert Systems with Applications*, 40(2), 638–645. doi:10.1016/j.eswa.2012.07.075
- Noel-Levitz. (2012). *2012 Marketing and Student Recruitment Practices for Master's-Level Graduate Programs*. Academic Press.
- Oinas-kukkonen, H., & Harjumaa, M. (2009). Persuasive Systems Design: Key Issues, Process Model, and System Features. *Communications of the Association for Information Systems*, 24(1), 1–18.
- Oplatka, I., & Hemsley-Brown, J. (2004). The Research on School Marketing: Current Issues and Future Directions. *Journal of Educational Administration*, 42(3), 375–400. doi:10.1108/09578230410534685
- Schäfer, K., & Kummer, T.-F. (2013). Determining the performance of website-based relationship marketing. *Expert Systems with Applications*, 40(18), 7571–7578. doi:10.1016/j.eswa.2013.07.051
- Sheppard, J. S. (2013). *Factors That Influence College Choice: Decisions of Graduate Students*. Academic Press.
- Srivastava, J., Cooley, R., Deshpande, M., & Tan, P. (2000). Web Usage Mining : Discovery and Applications of Usage Patterns from Web Data. *SIGKDD Explorations*, 1(2), 12–23. doi:10.1145/846183.846188
- Tareef, F., & Balas, A. (2009). *Marketing In Higher Education Institutes: Using An Internal Marketing Strategy And Innovation Models*. Academic Press.

ADDITIONAL READING

- Ali, D. M. M. (2013). The Role of Data Mining In Education Sector. *International Journal of Computer Science and Mobile Computing*, 2(4), 374–383.
- Bhate, D. V., & Pasha, M. Y. (2014). Analyzing Target Customer Behavior Using Data Mining Techniques for E- Commerce Data. *International Journal of Innovative Research in Computer Science & Technology*, 2(1), 16–19.
- Corley, J. K., Jourdan, Z., & Ingram, W. R. (2013). Internet marketing: A content analysis of the research. *Electronic Markets*, 23(3), 177–204. doi:10.1007/s12525-012-0118-y
- Husin, H. S. (2013). News recommendation based on Web usage and Web content mining. In *2013 IEEE 29th International Conference on Data Engineering Workshops (ICDEW)* (pp. 326–329). Ieee. <http://doi.org/> doi:10.1109/ICDEW.2013.6547475
- Nicoletti, M., Schiaffino, S., & Godoy, D. (2013). Mining interests for user profiling in electronic conversations. *Expert Systems with Applications*, 40(2), 638–645. doi:10.1016/j.eswa.2012.07.075
- Schäfer, K., & Kummer, T.-F. (2013). Determining the performance of website-based relationship marketing. *Expert Systems with Applications*, 40(18), 7571–7578. doi:10.1016/j.eswa.2013.07.051

Vellingiri, J., & Pandian, S. C. (2015). A Survey on Web Usage Mining. *International Research Journal of Engineering and Technology*, 02(1), 6–12.

Vesset, D., Morris, H. D., Eastwood, M., Woo, B., Villars, R. L., Bozman, J. S., Villars, R. L. (2012). Worldwide Big Data Technology and Services 2012 – 2015 Forecast. *IDC Analyze the Future*, 1(March).

Zarrella, D. (2014). *The science of Email Marketing*.

KEY TERMS AND DEFINITIONS

Analytics: The discovery, interpretation and communication of meaningful patterns in data.

Conversion: A *marketing* tactic that encourages a customer to take a specific action. In electronic commerce, *conversion marketing* is the phrase used to often describe the act of *converting* a customer who browses your site to a paying customer.

E-Marketing: Also known as internet marketing, web marketing, or digital marketing. They refer to advertising and marketing efforts that make use of web and email to drive traffic and make sales.

Profiling: The recording and analysis of a person's psychological and behavioral characteristics, so as to assess or predict their capabilities in a certain sphere or to assist in identifying a particular subgroup of people.

Prospects: A person regarded as likely to become a potential customer.

H