AUGMENTING DIGITAL MARKETING: VIA SAAS BUSINESS INTELLIGENCE

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ABSTRACT

Innovative technologies have aided in the evolution of communicative patterns between individuals, organizations, and society at large. For businesses this means that marketing must be integrated with emergent ICT in an effort to exploit available digital marketing tactics. Although there is an emerging body of literature that defines the elements of digital marketing there still remains a need for models grounded in theoretical and empirical evidence that explicitly integrates Software as a Service business intelligence (SaaS BI) within the realm of digital marketing.

The purpose of this study is to explore existing challenges for digital marketers and SaaS BI vendors in an effort to uncover common ground where marketing activities and SaaS services can be effectively integrated. Within this investigation a socio-technical systems perspective is employed in which the function of digital marketing represents a social sub-system and the service of SaaS BI represents a technical sub-system. Interconnectivity is established between digital marketing, SaaS BI, and diffusion of innovation through the exploration of existing challenges. A design artifact is constructed as a result of the thesis, which is intended to aid digital marketers when planning, implementing, or adjusting a marketing campaign that utilizes SaaS BI as an intelligence source. Within the investigation of digital marketing and SaaS BI both a theoretical and empirical study are conducted that serve as a basis for the designed model. The empirical study consists of a case study of the MeltWater Group, a SaaS vendor, and attempts to capture an in-depth understanding of the target domain. Empirical data is generated through semi-structured interviews triangulated with documents. Subsequent to building the conceptual model a short questionnaire was sent to participants with related knowledge of the domain problem to elicit feedback on the conceptual model’s correctness and usefulness.

The theoretical study serves the purpose of establishing a conceptual framework within the research phenomena. The subsequent empirical study was used to validate the relevance of the conceptual framework in addition to assist with the build and evaluate phase of the conceptual model design. As a result of the thesis investigation a conceptual model of the target domain was developed that maps the interrelated processes of digital marketing and SaaS BI.

In conclusion, the conceptual model captures a closed information loop between the SaaS vendor, client-organization, internal/external stakeholders, and the client-organization’s digital presence. The system domain processes are illuminated as seven sub-closed loops that depict the existing relationships between domain components. The integration of digital marketing and SaaS BI elucidates three core input/output processes (IOPs): a dual IOP internal and external of the SaaS vendor and an IOP internal of the client-organization.

Keywords: digital marketing, SaaS BI, digital intelligence, diffusion of innovation.
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A thesis investigation is a learning process that transforms its architects from journeyman to builders of knowledge. This process is not a solitary endeavor but one that is accompanied by preceptors from all walks of life. In similitude to the learning process a thesis investigation requires three essential components: focus – a subject matter to project ones attention towards, environment – a domain that fosters the modification of knowledge, and techniques – an approach that allows for systematic learning. Throughout this thesis investigation I have been fortunate enough to possess these essential components that allowed me to erect a new edifice upon the preexisting foundation it has taken me a lifetime to raise. But this is the nature of learning…the nature of research…it is cumulatively creative in the sense that the more you learn the more you realize how little you know. I am humbled by the opportunities I have been afforded and blessed to encounter individuals that inspire me to reach deeper into my resolve as I strive to construct knowledge.

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1 INTRODUCTION

1.1 Background
The present business environment continues to evolve as it has throughout the historical chapters of modern business. Mass production and automated processes persevere as driving forces in many business markets. And in similitude Peter Drucker’s assertion that ‘the purpose of businesses is to create a customer,’ continues to prove invaluable to the sustainability of all business types (Drucker 1986, p.47). Considering this, if we had to pinpoint one factor that remains fixated in the business/consumer dyad it would be that businesses must understand what customers’ value and devise strategies for creating and delivering such value. One of the most critical organizational functions performed that directly impacts the success or failure of any business is marketing (Grönroos 1993). The American Marketing Association (AMA, 2007) defines marketing as ‘the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.’

The information age has ushered in a myriad of innovative technologies that have aided in the evolution of communicative patterns between individuals, organizations, and society at large. Such communicative patterns also impact the business function of marketing that has now transitioned away from the one-way communication of product driven strategies towards the two-way communication of consumer driven strategies (Rust, Moorman, & Bhalla 2010). For businesses this means that marketing campaigns must employ emergent ICT in an effort to exploit all digital marketing tactics to engage consumers of today.

By scanning any available statistics pertaining to Internet usage it becomes instantly obvious that a massive amount of the world’s population is plugged into the World Wide Web. According to the World Bank Internet usage has risen approximately 80% in the USA alone between 1994-2010. With statistics showing over 2 billion people using the Internet on a daily basis it becomes obvious that using the Internet as a marketing platform has merit. Marketing tactics delivered through digital media are known by many names: Internet marketing, online marketing, web marketing, direct marketing, e-marketing, and interactive marketing. The most common term, Internet marketing, is somewhat limiting since its inference is to that of marketing through one particular form of technology. For the purpose of this thesis I will use the term digital marketing because of its extended coverage.

Digital marketing, a very dynamic function that exists within a complex landscape, is generally viewed as an umbrella term that covers a variety of marketing activities. Unlike Internet or web marketing that predominately consist of search engine
marketing, social media marketing, content marketing and e-mail marketing, digital marketing encompasses all such marketing activities yet is extended to not only include mobile and offline marketing but any form of integrated marketing that utilizes digital content. ‘Digital marketing encompasses a very wide range of platforms, media, channels, tools, services and applications’ (Sheldrake 2011 p.75). It refers to a marketing approach where information technology is integrated with traditional marketing activities in new methods to develop customer value and facilitate customer relationships (Liu & Lu 2011).

Although digital marketing is not a new activity it is still somewhat in its emergent stages with several challenges. The question of whether or not digital marketing is here to stay at this juncture appears rhetorical. Near recent occurrences of international financial crises have motivated businesses to become more innovative with digital marketing activities to enhance their competitiveness (Liu & Lu 2011). The current business landscape is virtually impossible to navigate without the use of e-business, which requires ICT to facilitate external activities and relationships within the business environment (Beynon-Davies 2004). Higher adoption of e-business technologies increases a business’s potential to efficiently communicate with customer and manage internal affairs (Trainor, Rapp, Beitelospacher & Schillewaert 2011). One factor that resonates in business literature is the alignment of e-business with digital marketing to enhance a business’s competitiveness (ibid).

Strategic initiatives are grounded in decision-making. This problem solving activity is rigorously supported by business intelligence, which has led to increased performance in numerous organizations (Watson & Wixom 2007). Business intelligence is gathered for several different purposes and classified under a range of terms e.g. competitive, technological, competitor, customer, sourcing, strategic, web, ambient, and marketing intelligence. But no matter the particular type of intelligence the general purpose is to support the decision-making processes, in accordance with the internal and external forces of organizations (Søilen, 2005). However in his view of intelligence Søilen (2005) excludes military and government intelligence since the intent and ethics under which the intelligence is gathered differs from those of business.

A review of the literature reveals that business intelligence is a broad umbrella like term that covers numerous intelligence terms related to business (Dumitrita 2011). For the intended purposes of this research I will use the term of business intelligence generally to include competitive intelligence, customer intelligence, and marketing intelligence (ibid). Patrick Marren (2004) defines business intelligence as ‘the rationale application of the principles of intelligence services to business, the collection, analysis, and application of strategic information to business decisions.’ Yet this is only one of several definitions that have been attributed to business intelligence.
The evolutionary innovation of Cloud Computing has given host to several emergent business models (IaaS, PaaS, and SaaS). Software as a Service (SaaS), the latest enterprise-computing paradigm to evolve, began with central mainframes, transitioned to client-server computing, then evolved to Internet Protocol computing, before reaching the current model (Heart, Tsur & Pliskin, 2010). The SaaS business model consists of software deployment through the Internet, where vendors provide remote access, maintenance, and upgrades to applications under a service contract called service license agreement (SLA) (Bhardwaj Jain & Jain 2010).

Although initial predictions for SaaS targeted SMBs recent studies have revealed that large businesses also foresee value in the adoption of SaaS in different areas of enterprises (Benlian & Buxmann, 2009). One specific area has been to deliver business intelligence through the SaaS business model termed SaaS Business Intelligence (SaaS BI). Such a service gives businesses the opportunity to gain insight into their given competition, market segment, customer base, etc. (Gash, Ariyachandra & Frolick 2011). Digital marketers function as both consultants in the marketing industry and as employees within respective business organizations yet the need to implement and maintain effective marketing campaigns remains a continuous challenge. SaaS BI presents an opportunity to systematically provide data integration, business analytics, and forecasting that could prove valuable to digital marketers (SAS Institute 2011).

1.2 Statement of Problem
Most, if not all, businesses today perform marketing activities within markets that are highly digitalized. The digitalization of these markets has resulted in a shift away from traditional research surveys for intelligence gathering to real-time interactive methods of gathering marketing, competitive, and consumer intelligence. As a result of information overload and emergent media, business intelligence in itself has become interactive. Various forms of intelligence are gathered and delivered through cloud computing services like SaaS BI. Such intelligence is no longer privy to large enterprises with resources to build and maintain BI environments but is now economically obtainable for all businesses. Yet within this endless sea of readily accessible intelligence and the shift to greater customer focus many marketers and businesses operate in a state of uncertainty. Although there is an emerging body of literature that defines the elements of digital marketing with directives for implementing a campaign there still remains a need for models grounded in theoretical and empirical evidence that integrates SaaS BI within the realm of digital marketing.

1.3 Purpose of Study
The purpose of the study is to explore existing challenges for digital marketers and SaaS BI vendors in an effort to uncover common ground where marketing activities and SaaS services can be integrated. Within the investigation of SaaS BI and digital marketing a socio-technical systems perspective is assumed in which the function of
digital marketing represents a social sub-system and the service of SaaS BI represents a technical sub-system. This perspective will aid in establishing interconnectivity between digital marketing, SaaS BI, and diffusion of innovation and explores existing challenges in individual facets and as an integrated system. As a result of this thesis investigation an artifact (conceptual model) will be designed that may be used by digital marketers when designing, implementing, or adjusting a marketing campaign that employs SaaS BI.

1.4 Research Questions
The main research question, ‘How can marketers integrate SaaS-based intelligence into the digital marketing process?’ will guide the logical steps taken in this research. However, the main research question is broad and will be better approached through answering a more narrowly focused sub-question.

By answering the research sub-question, ‘what components and interconnections are necessary for modeling the interactions between SaaS vendors and their client-organizations?’ relevant areas within the target domain will be illuminated and employed for designing a conceptual model intended to address the main research question.

1.5 Target Group
The target group of this research is composed of both practitioners and academics. In the application of digital marketing design principles practitioners include: SaaS BI vendors, marketing managers, digital marketers, social media marketers, marketing analyst, brand managers, digital and business strategist, business consultants, and mid to upper level managers. Academics concerned with the application of digital design principles include (but are not limited to) business and marketing scholars, advertisement researchers, and informatics researchers.

1.6 Delimitations
Although a BI environment consist of a data warehouse, transforming data to information, and the analytical processes of transforming information to actionable knowledge I will not focus on these traditionally structured components. I will instead approach BI as a service that supports organizations from web-based applications to support the marketing decision-making process. Although the proposed artifact is grounded in theory it is not validated through the empirical testing, this disqualifies this investigation from being classified as Design Science Research, as proposed by (Hevner 2007). As a result of this shortcoming I will categorize this thesis as a case study that employs design science tenets.

1.7 Expected Outcome
Through the investigation of digital marketing augmented via SaaS BI the expected outcome is an artifact in the form of a conceptual model. The intended artifact will illuminate the relationships that exist within the research phenomena and how various
forms of intelligence filter into the marketing decision-making process and underpin a digital marketing campaign.

1.8 Experience and Background of Author
The author comes from a Computer Information Systems (CIS) background. As with the study of Informatics, CIS is a convergence of business and information system courses. In business studies the dominant perspective is from that of organizational management, which gives a critical view of organizational concepts. The introduction to business intelligence has given me a better understanding of the processes involved in effectively managing information. My prior research experience in informatics investigated the interchange of information within virtual organizations. The experience allowed me to gain more insight into the dynamic relationship between humans and information systems. As an informatics major I have become deeply interested in the cognitive process that facilitates the design, development, and usage of technical/non-technical artifacts in perspective with the social agents they are intended to assist. My perspective of the currently evolving phenomena of digital marketing and SaaS BI could be viewed as a continuation of complex organizational phenomena research. My prior experience with marketing research has given me insight into primary and secondary intelligence gathering intended to assist the decision making process of a marketing campaign. Doing work for an entrepreneur with very limited resources I was motivated to find a systematic and economical knowledge management process for gathering continuous marketing intelligence. In hindsight SaaS BI may have been a logical solution to the marketing dilemma previously encountered I am still motivated to explore this interdisciplinary phenomena.

1.9 Thesis Structure
The function of (Figure 1) is to provide a visual aid of the multiple components of this thesis and to illustrate the components role in the thesis investigation. Chapter 1 provides a background for the thesis investigation through a literature review and a proposed research question underpinned by seven sub-questions. Chapter 2 contains the research design that involves a research perspective, strategy, data collection methods, data analysis methods, and results evaluation methods. Chapter 3 contains the theoretical study that establishes relevant subject areas and positions them within the context of the thesis. Chapter 4 contains the empirical study where empirical evidence is gathered and analyzed. A conceptual design model was constructed in iteration and advanced through the interaction with domain experts. Moreover a questionnaire is designed and administered for the purpose of evaluating the design model. Chapter 5 contains an analysis of the thesis results including the questionnaire and review of the design model. In chapter 6 a discussion is presented that contains the conclusion and an overall thesis evaluation.
Figure 1: Thesis Structure Model
2 RESEARCH DESIGN

2.1 Research Perspective

Theoretical paradigms are an integral aspect of research. From them we are given insight into what philosophical stance a researcher has chosen to position him/herself in relation to ontology, epistemology, human nature, and methodology (Burrell & Morgan 1979). According to Burrell & Morgan (1979 p.23) a paradigm is ‘a term intended to emphasize the commonality of perspective which binds the work of a group of theorist together.’ Research that addresses the phenomenon of information systems has mostly been approached from a positivist perspective (Goles & Hirschheim 2000). Positivism is a theoretical framework that attempts to investigate the social world through the same lens as applied to the natural world where context-free generalizations are quantitatively computed (Nagel 1986).

Using the scientific method of research is perceived by many, in certain research communities, as the only way to arrive at factual findings. In contrast to research conducted within natural sciences research from within social sciences e.g. psychology, sociology, organizational studies, economics etc. have evolved and adopted alternative methods of investigating phenomena (Goles & Hirschheim 2000). The restriction of adopting alternative perspectives within the field of information systems runs the risk of limiting the view of relationships within the phenomenon to that of a unilateral research approach (ibid). Interpretivism on the other hand is not as stringent as the positivist paradigm in reference to paradigmatic assumptions. Its characteristics are based on the tenets of multiple subjective realities, socially constructed meanings, studying people in natural social environments, and qualitative data collection and analysis (Oates 2006).

Historically, the research communities of positivism and interpretivism were engaged in a debate termed the ‘Paradigm Wars’ where the interpretivist paradigm sought to establish itself against the deeply entrenched positivist paradigm (Tashakkori & Teddlie 1998). As a result of the Paradigm Wars we have witnessed the re-emergence of the mixed method paradigm ‘Pragmatism’ (Harrits 2011). The pragmatic paradigm is categorized as a form of multi-paradigm research consisting of methods from both quantitative and qualitative approaches (ibid). The pragmatist position dictates that the ‘philosophical and/or methodological approach (that) works best for the particular research phenomena under study’ should be employed (Goles & Hirschheim, 2000, Tashakkori & Teddlie 1998). Pragmatism dates back to the late 19th and early 20th century American theorists and scholars such as John Dewey, William James, Oliver Wendell Holmes, and C.S. Pierce (Goles & Hirschheim 2000). Particular design and implementation selections in research design are decided based on the most appropriate method to fulfill the functional demands of a specific inquiry (Rocco, Bliss, Gallagher & Perez-Prado 2003).
The philosophical perspectives of positivism and interpretivism have contrasting stances consisting of both strengths and weaknesses (Harrits 2011). In a perfect world we as researchers should strive to employ the most rigorous methods that yield successful results. In this thesis the phenomena under investigation exist within the fields of Information Systems and Organizational Studies. Although most research conducted in each respective field of study has been predominated by a positivist perspective their complexity and pervasiveness have resulted in boundary and phenomena shifts (Goles & Hirschheim 2000). The philosophical position of this thesis should foster a worldview that commingles aspects of positivism and interpretivism into a type of pragmatic theoretical position.

Design Science Research (DSR):
As a science deals with the systematic creation of knowledge about, and with design. The scientific study of design and the use of design processes in the systematic creation of knowledge. And is directed toward understanding and improving the search among potential components in order to construct an artifact that is intended to solve problems (Bakerville, 2008).

Design Science Research (DSR):
Is fundamentally a problem solving paradigm. It seeks to create innovations that define the ideas, practices, technical capabilities, and products through which the analysis, design, implementation, management, and use of information systems can be effectively and efficiently accomplished (Hevner, March, Park & Ram, 2004).

Design science is highly pragmatic in nature yet it encompasses its own notable aspects in relation to the philosophy of science (Hevner et al. 2004). Such aspects incorporate the purpose-driven creation of artifacts and the inception of such artifacts into real world settings (ibid). A closer examination of design science research’s underpinning philosophy of ontology, epistemology, methodology, and axiology, makes it obvious that the metaphysical assumptions are unique (Vaishnavi & Kuechler 2004).

Ontology: An ontological stance is based on ‘what is the nature of reality?’ ‘It defines a set of representational primitives with which to model a domain of knowledge or discourse’ (Gruber 2009). The ontological stance within design science research ascribe to ‘multiple, contextually situated alternative world-states’ (Vaishnavi & Kuechler 2004), where a recognized context with many socially and technologically created realities exist (Gregg, Kulkarni & Vinzé 2001).

Epistemology: An epistemological stance is based on ‘what is the nature of knowledge?’ ‘It is the study of knowledge and justified belief’ (Steup 2011). The epistemological stance of the design science researcher ascribes to ‘knowing through
making: objectively constrained construction within a context’ (Vaishnavi & Kuechler 2004), deemed valuable to the researcher.

Methodology: A methodological stance is based on ‘what is the approach for obtaining the desired knowledge and understanding?’ (Guba & Lincoln 1994). The methodological stance of the design science researcher is ‘developmental (primarily); focus on technological augmentations to social and individual factors’ (Gregg et al. 2001) and to measure artificial impacts on the composite system (Vaishnavi & Kuechler 2004).

Axiology: is the philosophical study of value, commonly attributed to instrumental and intrinsic value (Hart 1971) in DSR the focus is placed on ethics and aesthetics (Vaishnavi & Kuechler 2004). The axiological stance of the design science researcher ascribes to ‘creative manipulation and control of the environment as being of greater priority than striving for truth and understanding’ (Vaishnavi & Kuechler 2004).

The philosophical grounding of design science research draws attention to the contrasting ontological and epistemological stances relative to that of natural science and social science approaches (Gregg & Vinzé 2001). Design science research is intended to give the IS researcher/practitioner a design space to design artifacts that address ‘wicked problems’ (Hevner et al. 2004). Globalization, digitalization, and emergent technological advancements lends to the ‘wicked problems’ present in IS design, development, implementation, and usage since it requires new approaches to problems that were previously non-existent within IT (ibid). Research conducted from a design science perspective holds the potential to unyoke the belief that methods and approaches must be linked to specific philosophies, which may lead to researchers/practitioners over looking potentially innovative or creative data gathering techniques (Knox 2004). As an information system designer I perceive the scope of IS research as augmenting the interaction between business strategy, IT strategy, organizational infrastructure, and IS infrastructure (Hevner et al. 2004).

IS research is managed in dual corresponding phases, behavioral science (the development and justification of theories) and design science (building and evaluation of artifacts). Through Design Science the augmentation of business, social, and technical problems are addressed by the iterative process of building and evaluation, which results in artifacts e.g. constructs, models, methods, and instantiations (ibid). In this thesis investigation my focus is to build and evaluate a conceptual model that will give a realistic account of how business intelligence infuses with digital marketing practices. Hevner (2007) proposes that Design Science research interacts with the environment and knowledge base of a given phenomenon resulting in three interactive cycles that focus on relevance, rigor, and design.
The Rigor Cycle bridges the Design Science activities with the body of knowledge that pertains to a specific phenomenon. The Relevance Cycle bridges the Design Science activates to the application domain (socio-technical system). The Design Cycle is central to the research process and will draw synergetic input form the Relevance and Rigor cycles, which I will use to build and evaluate the design artifact (Hevner 2007).

The Design Science paradigm is grounded in pragmatism with a unique ontology, epistemology, methodology and axiology. The philosophical stance of the Design Science paradigm aligns with a realistic worldview from which I will investigate the phenomena of SaaS, business intelligence, and digital marketing. Based on the above defined research problem of ‘How can SaaS deliver effective Business Intelligence to digital marketers?’ In this thesis a case study is employed with Design Science tenets to investigate the identified phenomena.

2.2 Research Strategy

A research strategy serves the purpose of providing a general overview of how a researcher intendeds to answer the thesis question (Oates 2006). It illuminates how a researcher plans to search for information in a rationally structured method, which will attest to the suitability of the information collected and increases thoroughness.

2.2.1 Sampling

Sampling is the function of choosing a dataset of a population grounded upon a sampling frame. Such a sampling frame may be based on sampling methods, which are classified as either probability (random) or nonprobability (nonrandom) (Oates 2006). Sampling aids in the research process by reducing cost and saving time when identifying and selecting a portion of a data source population. Sampling schemes used by quantitative researchers typically based on probability tend to be used to make statistical generalizations. While sampling schemes used by qualitative
researchers typically based on nonprobability tend to be used to make analytical generalizations. But regardless of the type of research conducted (quantitative, qualitative, or mixed methods) all researchers tend to make some type of generalization (Onwuegbuzie & Collins 2007).

**Critical Case**
In this thesis the sampling scheme used is based on that of a critical case and convenience. A critical case is a type of purposeful sampling that selects specific backdrops, groups, or individuals based on attributes that as a result of their involvement in the investigation yield credible insight about the phenomenon being studied (Onwuegbuzie & Collins 2007). The selected sample population is representative of companies that have an integrative approach to the SaaS business model. The sample frame presented here consists of the top (20) social media monitoring vendors for business, as presented by Socialmedia.biz. This sample is suitable for the phenomena under investigation since it is selected from a sample frame that fortifies organizations by supplying intelligence directly linked to marketing e.g. product development, customer support, public outreach, lead generation, market research, and campaign measurement. The selected sample (the MeltWater Group) is suitable for the proposed investigation since it provides SaaS based tools that can be used to deliver intelligence from various types of marketing activities. The proposed conceptual model is intended to capture a high level view of the interactions between the SaaS vendor and the marketing activities of a client-organization, thus the MeltWater Group is a suitable selection to represents a critical case sample. Selecting a sample representative of a critical case will allow me to produce relevant information for knowledge creation (Onwuegbuzie & Collins 2007). Since universal methodological principles are non-existent for identifying a critical case (Gobo, Seale, Silverman & Gubrium 2004) my decision is based on MeltWater being ‘most likely’ to provide me the opportunity to investigate a SaaS vendor in a relative real life context.

**Nested sampling**
This thesis investigation will involve two data collection methods (interviews and a questionnaire) involving two different populations. This necessitates more than one sampling design. In addition to the critical case sample a nested sampling design is also used. In the nested sampling design the participants interviewed from the critical case sample will serve as a subset of those to whom a questionnaire will be administered. A nested sampling design is used when key informant(s) from one sample population are selected to help generate additional data in a research investigation (Onwuegbuzie & Leech 2007). The research participants interviewed within the research case are perceived as rich data sources (domain experts) capable of aiding in the generation of additional empirical data by answering a questionnaire. Such ‘key informants’ often serve the purpose of being the voice of non-informant sample members or used to make internal generalizations (ibid). Here I have not
selected my key informants for these purposes they are chosen based on their individual knowledge pertaining to the research phenomena.

### 2.2.2 Case Study

The proposed research strategy from which the phenomena are examined is a case study. A research case is used in both quantitative and qualitative research studies, it focuses on an in-depth understanding of the dynamics that exist within single instances of the concept under investigation. It is an empirical inquiry used to examine a contemporary phenomenon in a reality-based context (Eisenhardt 1989; Yin 2003). A research case will ordinarily combine different types of data collection methods that may be used individually or in triangulation e.g. interviews, observations, documents, and questionnaires (ibid).

Case studies have been employed within seemingly contrasting philosophical paradigms. The literature informs use that European-oriented case research is predisposed to Interpretivism (Walsham 1995) while American-oriented case research is predisposed to Positivism (Eisenhardt 1989). Case studies used in a pragmatic approach allows a researcher the option of employing a data analysis procedure with supposition based on existing theory, while also allowing for the possibility of unexpected conclusions and justification to arise from the data (ibid). A case study is often used to achieve diverse research aims that defines a relationship to theory e.g. build a new theory, test an existing theory, or evaluate alternative theories (Oates 2006).

A case study is appropriate for understanding the complex intricacies between IT related innovation and organizational conditions (Darke, Skanks & Broadbent 1998). Yet employing a case study research method with Design Science tenets requires a researcher capable of capturing unexpected opportunities and ‘optimism and persistence in the face of unexpected events, especially during data collection activities’ (ibid). The phenomena of digital marketing and SaaS BI are both immature within organizational and IS studies and addresses a business strategy that involves Internet usage. Considering this along with the above stated factors I, in accordance with IS theorist Darke et al. (1998), proposes that a case study is an appropriate research strategy to investigate the current phenomena.

### 2.3 Data Collection Procedures

The most crucial decision to be made when the time comes to select a data collection method is what type of data will be collected (Marshall & Rossman 2006). Specific types of data gathering procedures are geared toward business impact data, statistical data or textualized data (ibid).

#### 2.3.1 Interviews

Interviews are used to collect data for various reasons e.g. gather detailed information, ask complex questions, investigate particular emotions and incidents that are difficult
to observe or describe through a questionnaire and explore information that is sensitive in nature or privileged (Oates 2006). In-depth interviews are commonalities in qualitative research as either an all-inclusive strategy or as one facet of a combination of data collection methods (Marshall & Rossman 2006). Although interviews fall into two fundamental categories, structured and unstructured, a third interview category categorized as semi-structured is a hybrid that combines element of the two basic categories (ibid). Structured interviews are very similar to questionnaires in the sense that they ensure that all questions are identical for every interviewee (Phillips & Stawarski 2008).

There is very little difference between a structured interview and a questionnaire except that in a structured interview the interviewer personally records the interviewee’s response (Oates 2006). An unstructured interview generally centers on topics and themes with few general questions. Here the interviewer initiates the conversation about a specific topic then allows the interviewee to talk freely about events, behavior, or beliefs and remains non-intrusive unless deeper clarification is needed (ibid). Here I will employ semi-structured interviews consisting of a specific list of themes to be addressed and questions to inquire about, yet I am willing to restructure the order of what is covered depending on the flow of the interview. This will allow for the opportunity to prompt the interviewee to delve further into issues that may arise or to initiate talks into issues the interviewee believes are relevant to the interview topic (Oats 2006).

Pertaining to research that seeks more objective assumptions; data generated through interviews may be triangulated with data collected using other techniques (Marshall & Rossman 2006). In relation to a case study strategy with design science tenets, interviews can be employed as a way of ‘top-and-tail’ that involves gathering data for the requirements phase of the investigation then returning to the field to collect user-feedback data concerning the designed artifact (Oates 2006). The data collection method of interviews is used in triangulation with data gathered through documents that support the proposed conceptual model. Three participants who have a working relationship within the research case will be interviewed using semi-structured questions as developed in the research guide.

2.3.2 Documents

In addition to the primary method of data generation outlined above a secondary supplemental method (documents) will incorporated to facilitate the primary method of interviews. Primary data is classified as data gathered by a researcher specifically for a research purpose; data collected by someone who did not participate in the research design or data collection but uses the data for other intended purposes is considered secondary data (Windle 2010). The use of secondary data permits the researcher to accomplish their goals in a shortened time span required for the collection of primary data and analysis (ibid). Advantages to using secondary data shall be viewed as economical, breadth of data availability, identify challenges, often
adds the perspective of authorities (Boslaugh 2007). The disadvantages of secondary data are potentially acquiring information that may not have been collected for your intended purpose or does not divulge how the data collection process was done (ibid).

Documents often function as pivotal sources of social scientific data (Prior 2008). As a data gathering technique documents fall into two categories: found documents (primary data) and research generated documents (secondary documents) (Oates 2006). Historical knowledge surrounding a specific phenomenon may be gained from the analyzing documents. Incorporating documents into gathered research data often requires an analytical approach (Marshall & Rossman 2006). Employing documents as a data gathering method can prove advantageous due to their unobtrusiveness, ability to represent the values and beliefs of individuals, and usefulness at broadening an understanding of the environment (ibid).

When using documents, as a secondary data collection method, consideration must be given to the purpose/context/timescale in which they were created and their relevance and appropriateness (Oates 2006). Specific attention must be shown to the evaluation of documents to determine their authenticity and trustworthiness; no matter how appropriate a document may appear it is only a partial view created for a particular audience (ibid). Especially with the excessive amount of documents available on the Internet, which can be far more fallacious than offline sources and require more ethical scrutiny (ibid). Several secondary research documents exist in relation to the research case. Understanding that such documents represent only a partial view of a phenomenon I will evaluate these documents in reference to context and timescale, authenticity, and trustworthiness.

2.3.3 Questionnaires

Another form of data collection employ within this thesis is a questionnaire. According to Oates (2006, p. 219) ‘a questionnaire is a pre-defined set of questions assembled in a pre-determined order.’ Similar to interviews research participants are asked questions in an effort to produce primary data for a study. By sampling a population in this manner researchers acquire knowledge about the collective distribution of characteristics, perspectives, and opinions (Marshall & Rossman 2006). Questionnaire designs include questions that may have one or several structured response categories (ibid). Typically questionnaires are used within a survey research strategy, yet they also have become commonplace within other strategies e.g. action research, case studies, and design science (Oates 2006).

Questionnaires are widely employed in research as a cost-effective means of collecting data. They have proven useful when researchers have a need to collect data from a large number of people, collect standardized data, or collect concise and non-controversial data (ibid). Although some questionnaires may appear as a list of loosely formed multiple-choice questions questionnaires require cautious design and construction so that well-founded, reliable data is produced (ibid). Questionnaires
may be administered in two forms such as researcher-administered and self-administered. Researcher administered questionnaires are consistent with that of a structured interview; self-administered questionnaires are answered by the research respondents without the presence or assistance of the researcher (Marshall & Rossman 2006). Both questionnaire forms have their pros and cons. Researcher administers questionnaire have a higher response rate and give the researcher the flexibility to add sub questions, yet the presence of the researcher and their gesticulative /vocal cues has shown to cause biasness (Oates 2006). Self administered questionnaires save time and assures that all respondents receive the same questions; it is proposed that self-administered questionnaires produce a more accurate account of the respondents’ views (ibid).

The questions presented in a questionnaire should be brief, relevant, unambiguous, specific, and objective (Fowler 2009). Certain types of questions are intended to elicit different types of data; here a decision should be made as to what type of data is needed. Generally questionnaires consist of either open-ended or closed ended questions. Open-ended questions take less time to develop but run the risk of getting varied responses that are hard to code. Closed ended questions take more time to design but their pre-coded responses are easier to analyze, some criticism has surrounded closed ended questions for leading respondents to answers they may not have conceived (ibid). A variety of closed ended formats can be used within a questionnaire, the most general types according to Oates (2006) are: yes/no answers, quantity questions, agree/disagree items, scale, questions, list questions, and rank order questions. Varying question types thoughtfully positioned can maintain a respondent’s interest yet the overuse of question types run the risk of confusing respondents and may result in error (Fowler 2009).

As with all data collection methods researchers must adhere to a specific code of ethics, this can be made visible by assuring respondents that their answers will remain confidential and that their participation in the data collection is strictly optional (Fowler 2009). As a researcher committed to doing credible investigations within the proposed questionnaire I must consider content validity, construct validity, and reliability. Content validity is concerned with determining whether the questions are designed appropriately to obtain a true sample of the domain being investigated (Oates 2006). Construct validity is concerned with determining whether the proposed questions appropriately measure what is purposefully being measured (Oates 2006). Reliability is concerned with determining whether the questionnaire would produce identical results if administered multiple times to the same respondent (ibid).

The proposed questionnaire is evaluated to determine if there are any difficulties responding to the questions, if questions are obscure, if instructions are feasible, if pre-coded responses yield desired results, and the timeframe needed to complete the questionnaire (ibid). In this thesis a questionnaire is designed and sent by email to a small number of participants that have related knowledge of the domain problem. The
The purpose of the questionnaire is to elicit feedback on the designed model to gather a perception about its correctness and usefulness. The questionnaire’s design consists of an introduction to the thesis study and the domain problem represented in the conceptual model. This is followed by model specifications that explain the different processes within the model and their intended purpose. Then a short questionnaire is presented that contains (13) five-point Likert scale questions.

### 2.4 Data Analysis Procedures

Employing a combination of data collection methods in a thesis signifies the possibility that the retrieved data types may vary. Design Science research requires that designed artifacts be analyzed (for correctness) by the process of and (for performance) by the designed artifact (Hevner et al. 2004). The data collection methods of interviews and documents will yield qualitative data, which is ordinarily non-numerical data. The data gathered through (interviews and documents) will serve as foundational grounds for the designed artifact. Understanding the design of artifacts proceeds through an iterative process, follow up data must be collected in an effort to evaluate the correctness and performance of the designed artifact. Evaluation data (feedback) will be collected by means of a questionnaire, which will produce quantitative data. This ‘top-n-tail’ structure of data collection requires the performance of two different analytical procedures.

#### 2.4.1 Qualitative Data Analysis

Since qualitative data is predominantly textual data I will focus on analyzing textual data. Qualitative data is often produced from case studies, ethnography, and action research yet can also be produced through positivist type data collection methods (Oates 2006; Creswell 2009). Data analysis is an ongoing process that extends throughout the course of the investigation in accordance with collecting data, making interpretations, and thesis writing (Psychology Press Ltd. 2004). Empirical data analysis will begin with making preparations to the data set so that the data is in a ready state for analysis. Raw data generated from interviews will be recorded on a MP3 audio file and transcribed into textual form. Once the data is transcribed the process will begin to make general sense of the information that has been collected. Reading through all the data is crucial since this will allow you to separate general descriptive information from that which is relevant to the thesis investigation (Psychology Press Ltd. 2004). The logic here is to identify categories and themes that either appear in the data or is revealed as data is reviewed. This is reflective of an inductive approach where I will enter the analysis with an open mind and allow the gathered data to speak to me (Oates 2006). The final stage in the analysis process will involve and analysis of identified themes and to discuss if the data agrees or contrast with existing literature or theories.

#### 2.4.2 Quantitative Data Analysis

Dependent upon the analysis of qualitative data and the initial design artifact I will then assess what has been done and devise a suitable questionnaire to gain feedback
to the tentative design. The questionnaire will serve as a basis to generate data in a quasi-experiment that will be statistically measured. The first step in the analysis process is to choose a method of equating a numeric value to all responses so that the data can be statistically measured (Oates 2006). Once this has been accomplished specific data types will be identified e.g. nominal, ordinal, interval, ratio. The first measurement that needs to be found is that of central tendency which consist of the mean (adding all the scores in a group then divide by the amount of respondents), median (if the amount of respondents are odd the median is the middle score, if even add and divide the two central values), and mode (the most frequently appearing score) (Psychology Press Ltd. 2004).

Next a distribution measurement should be conducted which can be accomplished by using e.g. range (difference between highest and lowest), interquartile range (the range of the middle 50% of scores), variation ration (non-modal scores to total number of scores), and standard deviation (provides a more precise measure of the range of scores) (ibid). Describing a data sets distribution helps to demonstrate how the scores in a given condition are positioned in accordance with one another (Creswell 2009). Interpretation of results is done in accordance to the research questions, specific indication will be given about the relevance of the interpreted data and how it supports or rejects concepts and themes presented in the tentative model. This in turn will serve as motivation in the re-iteration of the design model.

2.5 Strategies for Validating Findings

Strategies for evaluating gathered data serve the purpose of ensuring that the quality of the research remains vigorous. Strategies for validating qualitative findings are displayed through triangulation, member checking, participatory modes of research, and the clarification of researcher bias (Creswell 2009). Method triangulation combines various data collection methods within a single thesis investigation (Oates 2006). Although different accounts of data pertaining to a single phenomena may lead to multiple realities due diligence can be served by overlapping data results to identify consistencies (Creswell 2009). As stated above this thesis investigation is grounded in a pragmatic philosophy, which employs data collection methods that are dominant in contrasting theoretical paradigms.

The option to apply a set of evaluation criteria based on positivism and interpretivism is available in this thesis since a philosophical stance grounded in pragmatism is not bound to a specific data type. Researchers that design artifacts are afforded the space to evaluate their results based on criteria that employ logic, description, or simulations (Hevner et al. 2004). Petter, Zhazanchi & Murphy (2010) proposed evaluation criteria for design patterns, an artifact type geared towards software development. Since a conceptual model is a form of pattern (Riehle & Züllighoven 1996) criteria for evaluating patterns are applied in this thesis. The evaluation framework (derived from criteria central to design and exploratory research) is intended to assert a holistic perspective that incorporates both hard and soft evaluation techniques (Petter et al. [17])
2010). The five evaluation criteria below (Petter et al. 2010) will be used to validate whether the proposed conceptual model is:

1. Plausible – investigates whether a concept is logical. This can be achieved by establishing a theoretical foundation between the thesis and the research domain.
2. Effective – investigates whether a concept is reported in an understandable manner and that relevant concepts are identified and addressed in the proposed solution.
3. Feasible – investigates whether a concept is workable. This can be achieved by employing domain experts to review the conceptual model’s feasibility and by identifying existing boundary conditions.
4. Predictive – investigates whether a concept produces intended results. This is also related to internal validity, which establishes consistency between research design components.
5. Reliable – investigates whether a concept can be empirically validated. This can be achieved by presenting empirical data to verify your findings.

2.6 Result Presentation Method

Throughout this thesis investigation an abundance of data will be presented to support the thesis results, display relevance & rigor, and the logic relative to design decisions that are made. A substantial amount of the data will be retrieved from the existing body of knowledge, documents, interviews and questionnaires. These results will be presented in the most appropriate form to convey understanding and to enhance clarity. I will use tables, graphs, pie charts, models, and textual data to present the thesis results. Citations, quotations, and references that appear throughout the research will be presented in accordance with the Harvard System.

The artifact generated in this thesis process is in the form of a conceptual model that will represent the target domain of the phenomena under investigation.

Conceptual Models

On a fundamental level a model can be defined as something used to represent something else. In systems design models are illustrative accounts of a system that are either conceptually or mathematically represented (Guizzardi 2005). Conceptualization is a given set of concepts that effectively convey abstractions about a state of affairs within a subject domain (ibid). Both models and conceptualizations are state of affairs that live in the cognitive presence of the user or the acknowledged symbol system of a community (Ben-Ari & Yeshno 2006). A conceptual model is created to give a suitable representation of a system domain intended for understanding and communication (Norman 1983).
3 THEORETICAL STUDY

3.1 Key Concepts

The concepts illustrated here are representative of the technological synergy forged by a myriad of processes within a BI environment. What is most visible here is the hardware systems, software systems and actionable information concepts yet what is de-emphasized is the human-computer-interaction (HCI) necessary to augment the optimal performance required for more informed decision-making.

**Information Systems** - relate to the hardware and software used by people to support day-to-day work processes or strategic managerial activities through collecting, categorizing, and processing data (Nunamaker & Briggs 2011). Information systems fundamentally are methods of disseminating timely, accurate, and complete information/knowledge for the purpose of making better-informed decisions (ibid). Information Systems are distributed network systems that amass components of multiple values that are integrated in support of the end-user (Westmark 2004).

**Data Storage** - at the most fundamental level data storage is the process of storing recorded information. However, from the perspective of a BI environment data storage consolidates large volumes of information maintained in a data system capable of improving query/data mining performance (Ponniah 2010).

**Analytics** - is a body of statistical methods that help to describe facts, detect patterns, develop explanations, and test hypotheses. Analytics is understood as an essential function that fortifies the progress, validation, and effective usage of digital channels (Stanhope, Frankland & Dickson 2012). The analytics that are involved in this study
pertain to business performance and gaining contemporary insight into customer behavior.

**Web 2.0** - is defined by the ability of new web technologies that allow users to create and share web content. Web 2.0 is based on the principles that participative users create value, allowing such users free creation and distribution of information, and success is obtainable through collective intelligence (Constantindes & Fountain 2007).

**Information Delivery** - consists of utilizing meaningful and varied methods of providing analyzed data to system users (Ponniah 2010). Such methods include but are not limited to real-time reports, key performance metrics, and dashboards.

**Digital Intelligence** – is a form of intelligence that emerges from human computer interaction. It is perceived as a type of meta-intelligence that bridges the gap between web analytics and business analytics (Adams 2004). Stanhopes, Frankland & Dickson (2012) define digital intelligence as, ‘the capture, management, and analysis of data to provide a holistic view of the digital consumer experience that drives the measurement, optimization, and execution of marketing tactics and business strategies.’

**Business Decision-Making**- is a cognitive process (rational and irrational) (Simon 1979) constructed upon explicit or implicit assumptions (Niu, Lu & Zhang 2009). It necessitates a holistic view of the business environment in order to make operational and strategic choices for improved performance and the survival of a business. This process is the end result of the BI support system that transforms diverse data into intelligence and enables management to analyze data from varied business perspectives (Parkin 1996).

**Big Data** – is defined as the function of gathering and processing massive data sets in addition to the technologies and algorithmic tools utilized to examine the data sets (Horey, Begoli, Gunasekaran, Lim & Nutaro 2012). A high volume/velocity of information assets that require cost productive/ingenious methods of information processing that provides understanding, process automation, and decision-making (Lapkin 2012).

### 3.2 Relevant Subject Areas

The relevant subject areas examined within this chapter lend support in answering the research sub-question of, ‘what components and interconnections are necessary for modeling the interactions between SaaS vendors and their client-organizations?’ By exploring the relevant subject areas in this chapter (Business Intelligence, Marketing, Software-as-a-Service, and Diffusion of Innovation) I draw upon the authoritative relevance of the multiple bodies of work that have defined these areas and purposely approach them from a socio-technical systems perspective.
3.2.1 Socio-Technical Systems

Information systems are designed, developed, implemented and maintained for the purpose of assisting human agents in the fulfillment of work related task. Achieving information systems that are effective tools for their intended purpose does not fall into a rational theory of management/machine age perspective where complex problems are decomposed and addressed in smaller components (Avison & Fitzgerald 2006). We must bear in mind that information systems are intended to interact with a human activity system in a manner that improves the organizational work system (ibid). Kim & Kaplan (2006) proposes that rational development methodologies have convinced us that most system development problems are either tame or tamable when in fact the technical aspects of information systems are closed and predictable while the social aspects are open and non-deterministic (Avison & Fitzgerald 2006).

Thus, a socio-technical systems perspective dictates that organizations are composed of interdependent social and technical sub-systems where the organization is viewed as an open system that interacts with its environment (Patnayakuni & Ruppel 2010). Emphasis is placed on the work design assuming the premises that co-evolved subsystems have a better potential of yielding optimal results (ibid).

In this thesis study the phenomenon of SaaS BI is integrated with that of digital marketing to develop a conceptual model that will result in more effective marketing campaigns. From a socio-technical perspective the work design of the two subsystems are multi-faceted and complex since SaaS BI is categorized as a technical sub-system (tools, devices, techniques, artifacts, methods, procedures configurations, and knowledge) and digital marketing as a social sub-system (individuals that work in an organization and responsible for the context in which an organizational work system operates) (Patnayakuni & Ruppel 2010). Yet upon closer investigation it becomes obvious that the two supposed sub-systems of (SaaS BI and digital marketing) have all the existing elements of socio-technical systems in their own right. In addition to these two main phenomena we also must consider the web of technological innovations involved that must be diffused and utilized to enable the interoperability of interrelated processes. Diffusion of such innovations also carries with it socio-technical elements that I will remain cognizant of throughout this investigative process.

3.2.2 Business Intelligence

Information systems are a special type of work systems that provision information to support the planning and control procedures of an organization (Rockart & Treacy 1982). The concept that we understand as business intelligence (BI) today originated form within the phenomenon of decision support system (DSS). ‘BI systems combine data gathering, data storage, and knowledge management with analytical tools to present complex and competitive information to planners and decision makers’ (Gray & Negash 2003). DSS is an area within the field of IS that centers on supporting and enhancing administrative decision-making (Arnott & Pervan 2008). The evolution of
DSS has been impacted by different philosophies and stages in technological development, which to a large extent have supported distinct managerial constituencies. The field of DSS has encompassed several sub-fields throughout its existence e.g. Personal Decision Support Systems (PDSS), Intelligent Decision Support Systems (IDSS), Group Support Systems (GSS), Negotiation Support Systems (NSS), Knowledge Management-Based DSS (KMBDSS), and Executive Information Systems (EIS) which is today known as BI (Arnott & Pervan 2005). Of these early DSS sub-fields PDSS, KMBDSS, and EIS have reached wide spread recognition (ibid).

The functionality of EIS can be perceived as that of access status and personal analysis (Rockart & Treacy 1982). EIS primary purpose was to assist upper management by reducing information overflow, enhancing information relevance/timeliness/usability, highlighting critical success factors (CSF), improving communication, and mapping early warning indicators of shifting trends (Chi & Turban 1995). The second wave of EIS, termed Executive Support Systems (ESS), placed more focal intent on fortifying the executive decision making process through analytical tools that afforded drill-down/roll-up capabilities, information monitoring, aggregating global information, ad-hoc analysis, data visualization, filtering critical data, retrieving historical/current data, navigation of external data sources, ‘What if’ analysis, and forecasting (ibid). The integration of several EIS in the decision making process allowed such systems to solve more complex problems and in some instances automate the process (ibid).

BI is propagated as an umbrella term since it encompasses both the process of gathering intelligence and the usage of intelligence as a product (Jourdan, Rainer & Marshall 2008). The process of BI is made up of information gathering techniques used by organizations to generate functional intelligence that assists the organization in sustaining productivity (ibid). Included in the BI process is the identification of information needs, information acquisition, information analysis, and information storage/utilization (Lönnqvist & Pirttimäki 2006). The product of BI, the output of the BI process, is composed of information that enables organizations to have predictive insight into the actions of competitors, customers, suppliers, technology, markets, and products/services with an acceptable degree of certainty (Jourdan et al. 2008).

A BI environment is developed and maintained for the purpose of supplying intelligence to all three organizational levels e.g. operation, tactical, and strategic (Jourdan et al. 2008). The business information presented by BI is in an expedient and effortlessly utilized manner that provides the capacity to understand the significance behind such information. BI, generally perceived as advantageous to an organization, is allocated a substantial amount of resources yet considerable debate exists on how its value should be measured (Negash 2004). BI is often measured for various reasons yet the most common are to establish the value of the investment and to manage the
BI process by ensuring that it efficiently meets the informational needs of its users (Lönnqvist & Pirttimäki 2006).

DSS information is distinctly different from operational (or transactional) information, which is highly detailed information employed to support daily business operations. DDS information is understood as summarized information used by business management to aid in the decision making process. DSS evolved into what we today call a data warehouse, which resides at the heart of every BI environment. Organizations have grown increasingly reliant upon using the knowledge forged from the BI process as the rationale for business decision-making. Advantages for organizations adopting such systems surround the capacity to retrieve data in standard formats from diverse sources, a method of measuring goals and examining cross-functional data, to discern customers according to value, and to monitor customers’ behavior for the purpose of adding value to their experiences (Sheikh 2011). Yet as mentioned earlier several issues are associated with having a BI system such as high cost, limited usability, customization, and extensibility. In an effort to address such issues management has increasingly turned to cloud computing business models capable of delivering intelligence (ibid).

3.2.3 Software as a Service (SaaS)
IS outsourcing as an organizational practice began to evolve nearly forty years ago when large business corporations began to sign IS mega deals with service providers like Electronic Data Systems (EDS) and IBM (Dibbern, Goles, Hirschheim & Jayatilaka 2004). IS outsourcing entails an external agent that supplies one or more IS operational functions to a client organization (ibid). Previously third party companies had provided basic functions like data processing management, contract programmers, timesharing, procuring packaged software, etc. This phenomenon emerged mainly from a shift in business strategy where organizations focused on sustainable competitive advantage by concentrating resources and efforts to what they did best while outsourcing everything else (ibid). As a result of this shift in business strategy many senior executives began to view IS as a non-core activity, which they felt held an uncertain value (ibid).

Since the mainstream inception of IS outsourcing organizations have steadily grown more confident about employing available outsourcing services. The option to outsource IS has given many organizations that are not competent in software development the luxury of keeping their attention trained on areas where they are most productive. This in turn has allowed management to circumvent the strain of legacy systems while exploiting newer strategic applications better suited for global markets and greater customer satisfaction (Dhar 2012). Over the past decades traditional outsourcing has proved prosperous for vendors encouraging entrants into the IS outsourcing market armed with more innovative business models. Cloud computing is the most contemporary form of IT/IS outsourcing. It is composed of a three-tiered business model, Infrastructure as a Service (IaaS), Platform as a Service
Cloud computing has a dual interpretation relating to applications delivered as services via the Internet and systems software being run in data-centers that supply the service (Vouk, 2008). Although the distinction between IaaS and PaaS are slightly burred their functionality can be equated to that of utility computing while SaaS is what is commonly known as web applications (ibid).

SaaS and Application Service Provision (ASP) bear a striking resemblance and are often used interchangeably. ASP and On-demand software delivery models are part of the second wave of IT/IS outsourcing that have been superseded by SaaS (Heart, Tsur & Pliskin 2010). The two service models share several characteristics yet SaaS is a better-evolved model for the current business environment (Chou & Chou 2007). Software services provided through the SaaS model is developed by software vendors and are immediately made available by a temporary subscription contract. ASP software is borrowed and difficult to implement requiring both an up-front license fee and a subscription fee. SaaS has reached market acceptance far beyond that of ASP since it is more cost effective, ease of usability, inexpensive integration, multi-tenant scalability, frequently updated, and web-based (Choudhary 2007). SaaS’s wide spread acceptance has come in response to its ability to tackle some of the more standard but necessary functions that organizations must perform to remain competitive. SaaS’s centrally controlled software deployment has high flexibility, scalability, performance, and availability with less maintenance and a myriad of services (Bhardwaj, Jain & Jain 2010).

Although literature comparing pricing schemes of perpetual and service software models has not been extensive Choudhary (2007) affirms that SaaS licensing is advantageous since vendors are not encouraged to hold back new features. Since they have less invested in hardware and up front development cost they can produce high quality software at lower cost that is released faster with upgraded features. As competitive advantages becomes evermore elusive the logic behind SaaS vendors deploying software suites that encompass business processes detrimental to the survival of organizations is well placed. According to Pettey & Stevens (2010) worldwide SaaS revenue is expected to reach $14.5 billion by 2012 and 22.1 billion by 2015. The services being adopted at higher degrees are office suites, digital content creation, and business intelligence applications (ibid). With the confluence of so many business processes being offered as services we are beginning to witness other core functions such as marketing take advantage of the abundance of big data that can be swiftly transformed into marketing intelligence.

### 3.2.4 Digital Marketing

Digital marketing at its core is fundamentally grounded in traditional marketing theories. In spite of what the name implies it pertains more to the fact that businesses now market in a digital world. Marketing theories have shifted through several paradigms, philosophies, methodologies, approaches, orientations, strategies and
tactics since the emergence of mass marketing (Day & Wensley 1986). Much of the past half century of marketing thought has been predominated by the paradigm of transactional marketing in which marketing was basically perceived as a business function that followed a lifecycle (Grönroos 1994). Many business markets of this era were in their infancy stages with few competitors, which enabled them to focus on production and gaining customers (Palmer, Lindgreen & Vanhamme 2004). However, once these business markets reached maturity the business environment changed as substitutes increased to fulfill similar needs and more intense competition ensued (ibid). As a result of more turbulent business environments and saturated markets the competitive advantages previously enjoyed became unsustainable (ibid).

Contemporary marketing approaches of today still embrace the marketing concept philosophy where the main consensus is that of market orientation. Kohli and Jaworski (1990) identify this, as ‘the organization-wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organizational wide responsiveness to it.’ Slater & Narver (1994) propose that the three major components of market orientation are customer orientation, competitor focus, and inter-functional coordination. It is the contention of many marketing theorist that a marketing theory has a direct correlation to strategic orientation (Day & Wensley 1983; Slater & Narver 1994; Grönroos 1994). Around the 1970’s a paradigm shift occurred once transactional marketing was believed ineffective in the face of environmental changes e.g. distance, time, deregulation, globalization, competition, and technological advancement (Reid 2008).

Today’s highly interactive environment has made one-way marketing and impersonal transactions nearly extinct. Management has replaced its short-term strategy of marketing products with a more sustainable strategy of cultivating customers (Rust et al. 2010). The relational marketing paradigm has taken center stage in the marketing arena with a much more customer-centric approach to building long-term relationships (ibid). As with the changing of any guard the best of the rest is added to the new regime. The relationship marketing approach has not only brought with it the activities of interactive marketing and network marketing but also incorporates the existing activities of transactional marketing, database marketing, and the marketing mix (Reid 2008). From this position it is a matter of incorporating traditional marketing skills in a contemporary context and producing new mental designs that embody the coevolution of customers and business (Wymbs 2011).

Fast-forward the marketing revolution of the present and we are implanted into a marketing environment where marketing relationships must be integrated with digital marketing activities (Osborne & Ballantyne 2012). Arnott & Brigewater (2002) speculated that the potential for such a revolution to transpire hinged upon whether the Internet would have the impact to facilitate sustainable marketing advantages. The key ingredient necessary to ignite the marketing revolution was the possibility of one-on-one interaction that enabled marketers to construct strong, sustainable
relationships with customers (ibid). The way that marketing is practiced in the 21st century provides proof that such a revolution is upon us. Technological advancements that compliment the interactivity of the Internet (Web 2.0) has distorted the marketing landscape and revolutionized both the way marketing is performed along with the role marketing now assumes in organizations (Harrigan & Hulbert 2011). Marketing is no longer seen as a function that exists within the marketing department and the task of dedicated employees but a cross-functional coordination facilitated by managers from all organizational levels (Reid 2008).

According to Drucker (1986) the two most basic functions of an organization are ‘marketing and innovation’ both activities are critically dependent upon forecasting the future and forging truthful relationships with customers. Such relationships are significant to innovation since they permit insight to what customers need and want (Selden & MacMillan 2006). If marketing is based on making future predictions and the Internet is undoubtedly an innovation that will persist to exist in the near future, then marketers should be concerned with how emerging technology will interact with customers and its impact on the future marketing landscape (Zinkhan 2005). The integration of IT and marketing, frequently regarded as digital marketing, involves an extensive collection of interaction enabling technologies that are employed to give customers access to business resources and information while in exchange supplying the business with valuable customer information (Trainor et al. 2011).

Digital marketing was first introduced in the later half of the 1990’s when the Internet was still pretty much seen as unchartered territory with limited or unforeseen potential. Since then e-business and the Internet have dramatically transformed the way businesses manage transactions and communicate with their customers (Pearce, 1976). Digital marketing supports and propels the quality of interactive media by enabling addressability, two-way interaction, customization, e-commerce, and marketing (Constantinides & Fountain 2008). Not only can digital marketing be used to exploit the Internet but it can also be used to access and variety of digital channels e.g. mobile phones, wireless communication, and digital TV (Li, Li, He, Ward & Davies 2011). Yet with all the potential encompassed within digital marketing it does not exist without challenges, recently the (PulsePoint Intelligence Report 2012) identified the most challenging aspects of digital marketing as overwhelming complexity, lack of unified measurement, real time intelligence, and unified automation.

Emergent technology and the sudden growth of Internet access pose a challenge for traditional marketing research; although data collection methods have become more economical the management of information overload requires additional skill sets to effectively cope with knowledge discovery and dissemination (Wind & Mahajan, 2001). Mahajan & Wind (1999) propose that the function of marketing research can benefit from: diagnosing problems as opposed to test solutions, taking a more unified approach, improving the swiftness and accuracy by employing emergent IT, and by
broadening the strategic impact of marketing. The digital marketing environment calls for academic research that expands on methodological and traditional strengths in order to produce functional concepts and methodologies where the marketing concept is grounded in conjoint analysis, diffusion models, and prior innovative designs (Wind & Mahajan 2001).

Digital marketing, an evolved method of marketing, is still a core function of business, one that takes a central position within organizations and receives input from all other business functions. Organizations heavily immersed in innovative technology are deemed as having marketing strategies that are information technology driven (Day 1998). With such fully interactive marketing strategies it can be deduced that a fair amount of attention must be imparted to the diffusion of the technologies that make this function successful. In fact, from a more logical path of deductive reasoning it could be implied that digital marketing is an accelerant to the diffusion of innovation. Many of the technologies that are infused within Web 2.0 contribute to the production of big data and play a role in changing customer behavior which will eventually lead to them becoming inducted into the digital marketer’s repertoire. Even though such disruptive technologies appear to pose a threat to markers established mode of operandi Constantinides & Fountain (2007) propose that Web 2.0 components be embraced as a challenge to the emerging marketplace. Emergent ICT use within marketing can possibly be discerned as an element that eradicates the barriers of innovation (Vilaseca-Requenal, Torrent-Sellens & Jiménez-Zarco 2007).

3.2.5 Diffusion of Innovation

Technological and business related innovations are adopted and diffused at varying rates into societies. Several models have been developed in reference to mature markets and the institution of new products to describe and understand how the diffusion/acceptance of innovation occurs (Stahl & Maass, 2006; Wejnert 2002). A review of the literature shows that diffusion research has been conducted on diverse innovations e.g. IT, agriculture practices, fertility control methods, policy innovations, spreadsheet software, database design tools, etc. (Wejnert 2002, Loh & Venkatraman 1992). Since no one theory can fully cover theories that define the cognitive state and the behavioral motivation of human action (Bates, Manuel & Oppenheim, 2007) I have chosen to explore two theories of relevance to the thesis topic respectively: Diffusion of Innovation Model (DIM), Technology Acceptance Model (TAM), and use the Gartner’s Hype Cycles to illustrate the relative maturity of related technologies.

The innovation diffusion theory has given researchers a means to examine how emergent innovations are assimilated throughout systems e.g. countries, organizations, communities, individuals, etc. (Vanderslice, 2000). The term that describes this process is called diffusion of innovation, which Rogers defines diffusion as ‘the process by which an innovation is communicated through certain channels over time among the members of a social system’ (1995, p. 5) and
‘innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption’ (Rogers 1995, p. 11). The diffusion process is composed of four elements (innovation, communication channels, and a social system (Rogers 1995). The innovation diffusion theory incorporates three main components (innovation decision process, characteristics of innovation, and adopter characteristics (Bates, Manuel & Oppenheim, 2007),

1. Innovation Decision Process: (knowledge, persuasion, decision, implementation, and confirmation).
2. Characteristics of Innovation: (compatibility, complexity, observability, relative advantage, and triallability).
3. Adopters Characteristics: (socio-economic, personality values, and communication behavior).

The theory set forth by Rogers (1995) categorizes the adopters of innovations in five measured units that are based according to the respective time an innovation is adopted. The innovativeness (the degree that an individual or other component of adoption are quicker at assuming new ideas as compared to other members of a social system) of the five-adopter categories are: innovators, early adopters, early majority, late majority, and laggards (ibid). The diffusion model, vertical scale labeled as rate of adoption and horizontal scale as adoption over time, is generally plotted in an S-shape curve distribution an signifies how an innovation progresses over time (Rogers 1995; Loh & Venkatraman 1992). Most innovations assume an S-shape rate of adoption yet the rates at which they are adopted often vary from innovation to innovation (Rogers 1995). Although there are many aspects that impacts an innovation’s rate of adoption one factor that is central is the dynamics of the social system where the diffusion occurs (ibid).

As of more recent years diffusion research has been concerned with electronic markets and information goods, where adoption and diffusion processes are investigated using Rogers’ DIM (Stahl & Maass 2006). The social system under investigation here is organizations that adopt SaaS, BI, and digital marketing. Rogers (1995) uses diffusion of innovation in a manner that includes both the planned and the unplanned dissemination of new ideas, which in this thesis I classified as a technological innovation. Innovations that have shown to disseminate more expeditiously than others contain Rogers five perceived characteristics of innovation (PCI) e.g. relatively advantageous, constant with existing values, opinions, and experiences, easily understood and adaptable, visible, and divisible (Rogers, Medina, Rivera & Wiley 2005). The innovation-decision process is one that hinges on information seeking and information processing in an effort to decrease (uncertainty) a major barrier of diffusion (ibid). Social systems are bound by relationships (social structure), which are established and maintained through communication (communication structure) both of these social system dynamics have the ability to promote or disrupt the diffusion of an innovation in a system (Roger 1995). Social
systems are governed by system norms, another barrier to change, at both the macro and micro level, and are responsible for the behavioral patterns of system members. Decisions to adopt or reject an innovation are influenced by members of a social system that are identified as opinion leaders, change agents, or aides (ibid).

Another approach to describe short-term (acceptance/adoptions) and long-term (usage) behaviors at the micro level has been through the Technology Acceptance Method (Flett, Alpass, Humphries, Massey, Morris & Long 2004). Davies (1989; et al. 1989) conducted research that focused on determining factors for information system success. The TAM is grounded in the social psychology models of Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) (Flett et al. 2004). TAM is based on the premise of two constructs, (1) perceived usefulness (PU) and (2) perceived ease of use (PEOU) (Davies 1989). According to Moore & Benbasat (1991) PU is identified as ‘the degree to which an individual believes that using a particular system would enhance his or her job performance’ and PEOU is identified as ‘the degree to which an individual believes that using a particular system would be free of physical and mental effort.’ TAM is also of importance to this thesis as prior innovation diffusion literature establishes that perception of using an innovation (PU) and perceived complexity (PEOU) exist in both theories (DIM & TAM) and describe the same characteristics which are critical determinants to whether the innovation diffuses (Moore & Benbasat 1991).

Gartner’s Hype Cycle, which first appeared in 1995, was developed as a model that further builds on the performance S curve and other adoption curve models. The hype cycle is employed by mapping the emergent stages of a technology’s life cycle through 5 phases: technology trigger, peak of inflated expectation, trough of disillusionment, slope of enlightenment, and the plateau of productivity (Linden & Fenn 2003). Unlike most diffusion models the hype cycle mirrors human attitude toward technological innovations and registers a technology’s maturity in a dual wave (ibid). The first wave (the peak of inflated expectations) is defined as the peak of hype, which takes place when there is (media hype) minuscule adoption in the marketplace and often limited product performance (Fenn 2010). The second wave (slope of enlightenment), which is more reflective of the performance S curve, is affiliated with a more profound type of adoption and growth (ibid). The hype cycle can also be employed as a quantification of knowledge and risk since its first wave is a period marked by a lack of knowledge and therefore risk are increased while the second wave knowledge of a particular technology is more abundant and informed decisions are predisposed to less risk (ibid).

3.3 Previous Research

As the phenomenon of SaaS BI and digital marketing is interactively painted we are confronted with the inescapable reality that technology and marketing are intricately linked (Granitz & Koering 2001). It is also obvious that firms have begun to realize that digital tools present significant opportunities, yet the challenge of exactly how
digital media will improve profit margins still remains (McKinsey Global Survey 2009). A review of the literature indicates that academic studies targeting the interactions between digital marketing and SaaS BI as a phenomenon are somewhat limited however from the perspective of reviewing the two distinct fields of study individually a broader number of studies can be identified.

3.3.1 SaaS
What we have now come to understand as the SaaS business model originated from the desire of businesses to reduce expenditure of IT related cost. The IT service industry has been a viable option that organizations have perused since the 1989 Kodak-IBM deal that spawned the existing outsourcing revolution (Loh & Venkatraman 1992). In reference to the earlier literature several theorist have ascribed part of the outsourcing rationale as being that of transaction cost theory (Williamson, 1979,1981, Walker & Weber, 1987, Lacity & Hirschheim 1993). According to Costa (2001) the most general driving forces related to IT outsourcing are cost reduction, technical consideration, and the necessity to focus on core activities. Yet as others have affirmed (Clark, Zmud & McCray 1995) the complexity of motivating factors that inspire outsourcing are vast with the most influential force being that of efficiency. In determining which aspect of a firms IT resources can be appropriately outsourced we only need to look no further than those functions that can be assessed as commodities (ibid).

Examining our current state of SaaS adoption most researchers continue to employ economic, strategic, and social theories to support the common rationale (transaction cost theory, resource-based view, and theory of planned behavior) for firms opting to use software as a service (Benlian, Hess & Buxmann 2009). The SaaS business model is essentially perceived as a more evolved outsourcing model that offers users cost saving, better resources utilization, more application access scalability, with global outsourcing possibility (Chou & Chou 2007). SaaS is not a new computing convention where the primary objective is to detach software ownership from its usage (Chen, Shiué & Shih 2011, Heart et al. 2010). Abdat, Spruit, & Bos (2010) predicts that by 2014 revenue generate from SaaS is expected to exceed five times that of traditional packaged software sales. Although the adoption rate of firms utilizing SaaS continues to grow a reoccurring theme in the literature is dedicated to better understanding this adoption rate by applying theories such as diffusion of innovation (DOI), technology acceptance model (TAM), and task/technology fit (TTF) (Chen et al. 2011).

Enterprise wide SaaS applications e.g. enterprise resource planning (ERP), customer relationship management (CRM), supply-chain management (SCM, content management, human resources (HR), and business Intelligence (BI) are becoming more standardized in SMBs and large organizations (Heart et al. 2010; Benlian et al. 2009). The adoption of such cloud-based services have allowed businesses to become more agile, flexible and cost efficient in comparison to earlier software development
lifecycles and commercial off the shelf (COTS) application endeavors (Hai & Sakoda 2009). Yet as noted by Benlian et al. (2009) adoption of software services vary in reference to specific characteristics of an application like those noted to be less specific, strategic relevant, and that face a lower level of uncertainty have a greater potential of being adopted.

In addition to pre-existing Internet and ICT usage, cloud computing contributes to the creation of huge data sets that can be collected and analyzed cost effectively (Chow, Golle, Jakobsson, Shi, Staddon, Masuoka & Molina 2009). While individuals create 75% of the digital information that exists enterprises are responsible for about 80% of the information at some point within the information’s given lifecycle (Gantz & Reinsel 2011). Organizations have become more data driven and require tools to extract value from all forms of managed information. SaaS vendors vigilant of escalating organizational needs to gain valuable insight from real-time data are applying significant effort to develop SaaS tools capable of meeting such demands (Evelson, 2011).

### 3.3.2 SaaS BI

In reviewing the available literature for business intelligence (BI) it becomes obvious that the traditional on premise data warehouse is still alive but as SaaS BI alternatives become more widespread its stature is beginning to dwindle. It would be erroneous to imply that the need or usage of data warehouses to provide information necessary to acquire BI has declined, on the contrary the need and usage of BI has become more indispensable than ever (Watson & Wixom 2007). The uses of cloud computing based BI tools are on the rise since it eliminates the need for numerous dispersed applications, development and maintenance of the data warehouse, and training time (Grabova, Darmont, Chauchat & Zolotaryova 2010). What started as a vision of real time BI due to unstable business environments and the ever-expanding applicability of the Internet has become a reality by way of the SaaS business model (Azvine, Cui & Nauck 2005). No longer must the recipient of critical BI concern themselves with architecture and components or the transformation intricacies of the system but can now fast forward to the issue of delivering increased value through existing ICT innovations (Schlegel, Beyer, Hostmann, Sallam, Gassman, Rayner, McMurchy, Chandler & Cain 2008). The Internet has become much more than a mere communication vehicle and is now transforming into the Internet of services (Oberle, Bhatti, Brockmans, Niemann & Janiesch 2009) capable of holistically interlinking the multitude of informational task carried out every nanosecond across the Internet. SaaS BI is capable of efficiently leveraging various data assets both internal and external of an organization and delivering analyzed results upon demand (Dumitrita 2011). The benefits of SaaS BI include multi-tenancy support, reduced expenditure, rapid deployment and easy maintenance, centralized administration, comprehensive security, high scalability and performance, quick feedback loop, flexibility, and customizable interface (ibid; Sheikh 2011).
SaaS BI tools are not new installments to business process management. The most broadly used SaaS tools to date are customer relationship management (CRM) and enterprise resource planning (ERP), which were developed to alleviate pressures caused by systems integration and management. Marketing automation software, e.g. SaaS based CRM, is perhaps the earliest instance of SaaS based tools used to optimize customer satisfaction and systematically generate marketing insight (Faase, Helms & Spruit 2011). Although SaaS CRM software has a specific focus it can also be categorized as a type of SaaS BI tool that covers a broad range of activities e.g. extracting and transforming data, sorting data, moving data, storing data, accessing data, and delivering data (Limbășan & Rusu 2011). Web 2.0 technologies and social media monitoring tools play a critical role in gaining customer insight by capturing business intelligence/analytics relevant to organizational decision makers (Band & Petouhoff 2009). Such SaaS BI tools allow digital marketers to gather data from multiple business function processes and social collaboration processes to compile the actionable information necessary to support the marketing process (Biegel 2009).

### 3.3.3 Digital Marketing

An early study conducted by Parsons, Zeisser & Waitman (1998) focused on the emergence of new media and both the potential opportunities and threats they presented for marketers. This study may be viewed as foundation building because it centered on defining the characteristics of ‘digital marketing’ and determining its importance. The authors proposed that in light of the differences between the one-way communication in a mass-market environment and the two-way communication in interactive media that new models for marketing for such an environment should be established. One such proposed model was the Digital Marketing Framework and Levers that focused on attracting users, engaging users, retaining users, learning users preferences, and relating back to them (ibid). The authors see digital marketing as having the ability to redefine firms and identified organizational challenges based on four dimensions: formal vs. informal, centralized vs. decentralized, in-house vs. outsourced, and functionality focused vs. customer focused. They foresaw the three most significant challenges for marketers as: continuously enhancing the customers value position, construct relationships and skills that embrace continuous change, and the management of both internal and external interdependencies (ibid).

Brodie, Winlhofer, Coviello & Johnson (2007) conducted a study where they explored the penetration of e-marketing and business performance. The authors, in agreement with Day & Bens (2005), proposed that organizations that adopt eMarketing practices are more likely to posses a competitive advantage. They contend that e-business and the Internet has lead to a dramatic transformation in marketing calling for a revision of the original CMP framework (transactional marketing, database marketing, interaction marketing, and network marketing) to include eMarketing. In their research an analysis of studies done from 2002 – 2005, which focused on factors influencing e-business and Internet practices, was conducted and a conceptual model was developed targeting the factors influencing the penetration of
eMarketing. In their conclusion eMarketing is established as a highly integrated practice that has a positive correlation to business performance. Thus eMarketing is perceived as coming of age in light of its increased penetration by organizations at medium and high levels that have integrated it with existing marketing practices.

As Wind & Mahajan (2002) have pointed out the business landscape has encountered a digital revolution that has had a profound impact on marketing. The authors assert that an ever-shifting global digital environment must be met by a new marketing paradigm where all concepts, methods, and practices require re-examination for appropriateness. The vigor and pervasive impact of the Internet poses a challenge for both academic communities and business practitioners alike in reference to the new rules for marketing in a digital age. Such challenges should be approached from a multi-disciplinary cross-functional stance, which expound on methodological and traditional strengths that focus on consumer acceptability. Technological advancements have resulted in cyber consumers that desire goods and services sorted by vast combinations of attributes; building relationships with such consumers require understanding of their changing needs as well as their preferred forms of communication. Sarkees (2011) puts forward that a worthy approach for a firm’s to become technologically opportunistic in the face of rapidly advancing technology. Such technological opportunism (perceiving and responding to technological advancements that have the potential to change the way firms conduct business) is profoundly affected and enhanced through a firm’s marketing activities (ibid).

Trainor, Rapp, Beitspacher & Schillewaert (2010) conducted a survey of 522 Belgian firms in an effort to ascertain if whether market and technological orientation resulted in e-marketing capabilities that emphatically impacted firm performance through increased customer retention and satisfaction. According to the authors digital marketing technologies expand beyond the boundary of online promotions and communications to incorporate other marketing activities e.g. CRM, customer support, sales activity, marketing research and strategy. A model is proposed based on the prior empirical studies and the survey results, which depict how market and technological orientation interacting with the competitive environment impact marketing capabilities. This in turn interacts with market turbulence and competitive intensity to impact customer relationship performance and organizational performance (profitability and ROI). This study contributes to the body of marketing literature by stressing the significance of marketing functioning as a form of innovation and the need to integrate social, technological, and business resources to construct innovative means of sustaining customer interactions and relationships. Additionally this study speaks directly to this thesis by proposing the need for more research to be conducted that investigates the potential for eMarketing (given the extensive application of IT within current marketing) to ‘enhance firm performance and generate competitive advantage’ (ibid).
3.4 Relevant Literature Sources

A review of relevant literature sources is intended show a researchers awareness of the existing body of knowledge for a given phenomenon in relation to a historical context, overview of current context, relevant theoretical and conceptual underpinning, builds a frame of reference for a practical problem, and is relevant for identifying gaps in previous research.

<table>
<thead>
<tr>
<th>Study</th>
<th>Topic</th>
<th>Description</th>
<th>Cited</th>
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<tbody>
<tr>
<td><strong>Business Intelligence</strong></td>
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<tr>
<td>Negash, S. (2004)</td>
<td>Business Intelligence</td>
<td>Proposed a framework that highlights the importance of unstructured data and the necessity to develop BI tools.</td>
<td>188</td>
</tr>
<tr>
<td>Watson, H., J., &amp; Wixom, B., H. (2007)</td>
<td>Business Intelligence</td>
<td>The article investigated the BI framework discussing both its purpose and processes including the benefits it offers. Six keys to BI success are proposed and the emerging trends of real-time BI, pervasive BI, and business performance management are discussed.</td>
<td>132</td>
</tr>
<tr>
<td>Arnott, D. &amp; Pervan, G. (2008)</td>
<td>Business Intelligence</td>
<td>Conducted a study of 1,093 DSS articles published between (1990 – 2004) and identified 8 key issues that needed to be addressed.</td>
<td>93</td>
</tr>
<tr>
<td>Chung, W., Chen, H., &amp; Nunamaker Jr, J. F. (2005)</td>
<td>Business Intelligence</td>
<td>Proposes the BI Explorer tool, which implements steps of a knowledge map framework for discovering BI on the web.</td>
<td>87</td>
</tr>
<tr>
<td>Lönnqvist, A. &amp; Pirtilmäki, V. (2006)</td>
<td>Business Intelligence</td>
<td>Conducted a study that to determine the value of BI and for managing the BI processes within an organization.</td>
<td>20</td>
</tr>
<tr>
<td>Pearce, F., T. (1976)</td>
<td>Business Intelligence</td>
<td>Conducted a (2) part study that in part 1 defines Intelligence systems for business purposes and part 2 gives examples of BI activities conducted within such systems.</td>
<td>16</td>
</tr>
<tr>
<td><strong>Marketing</strong></td>
<td></td>
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<tr>
<td>Day G., S. &amp; Wensley, R. (1983)</td>
<td>Marketing</td>
<td>Investigates the existing role of marketing theory within the firm and implicates theory development in strategic marketing.</td>
<td>393</td>
</tr>
<tr>
<td>Day, G. S., &amp; Montgomery, D. B. (1999)</td>
<td>Marketing</td>
<td>Investigate how fundamental issues serve to establish marketing in the face of trends e.g. connected knowledge economy, (globalizing, converging, and consolidating industries), fragmented and</td>
<td>337</td>
</tr>
<tr>
<td>Authors</td>
<td>Field</td>
<td>Title</td>
<td>Abstract</td>
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<tr>
<td>Constantinides, E. &amp; Fountain, S., J. (2007)</td>
<td>Marketing</td>
<td>Conducted a study that examines the relevance of Web 2.0 for marketing strategy and direct marketing.</td>
<td></td>
</tr>
<tr>
<td>Wind, J. &amp; Mahajan, V. (2002)</td>
<td>Convergence Marketing</td>
<td>Examine the implications of convergence for marketing and business strategy and how the will shape the technological revolution.</td>
<td></td>
</tr>
<tr>
<td>Rust, R., T., Moorman, C., &amp; Bhalla, G. (2010)</td>
<td>Marketing</td>
<td>Proposed that organizational marketing strategy be rethought from that of product-driven to a one that is more centralized and customer-driven.</td>
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</table>

**Software-as-a-Service (SaaS)**

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<thead>
<tr>
<th>Authors</th>
<th>Field</th>
<th>Title</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun, W., Zhang, K., Chen, S. K., Zhang, X., &amp; Liang, H. (2007)</td>
<td>Software-as-a-Service (SaaS)</td>
<td>Analyzes key functional and non-functional SaaS integration requirements and summarize the SaaS integration patterns and offerings. A framework is proposed that addresses the gaps both technically and from a tooling perspective.</td>
<td></td>
</tr>
<tr>
<td>Bhardwaj, S., Jain, L. &amp; Jain, S. (2010)</td>
<td>Software-as-a-Service (SaaS)</td>
<td>Investigates the characteristics, reasons for adoption, and applications as well as identifies SaaS provider responsibilities and consumer benefits.</td>
<td></td>
</tr>
<tr>
<td>Dibbern, J., Goles, T., Hirschheim, R. &amp; Jayatilaka, B. (2004)</td>
<td>IS Outsourcing</td>
<td>Proposes a conceptual framework to categories outsourcing literature by research objectives, methods used and theoretical foundations, which helps to</td>
<td></td>
</tr>
</tbody>
</table>
identify five major sourcing issues and structure the explanatory factors and theoretical relationships within each sourcing stage.

<table>
<thead>
<tr>
<th>Clark, T., D., Zmud, R., W. &amp; McMray, G., E. (1995)</th>
<th>IS Outsourcing</th>
<th>Outsource decisions are discussed in relation to incentives and disincentives of outsourcing relationships and a framework is proposed for contemplating the outsourcing option.</th>
</tr>
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<tbody>
<tr>
<td><strong>Diffusion of Innovation</strong></td>
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<tr>
<td>Davis, F., D. (1989)</td>
<td>Diffusion of Innovation</td>
<td>This study develops and validates new scales for perceived usefulness and perceived ease of use.</td>
</tr>
<tr>
<td>Moore, G., C. &amp; Benbasat, I. (1991)</td>
<td>Diffusion of Innovation</td>
<td>This study explicates the development of a tool used to measure multiple perceptions related to the initial adoption and eventual diffusion of IT innovations within organizations.</td>
</tr>
<tr>
<td>Wejnert, B. (2002)</td>
<td>Diffusion of Innovation</td>
<td>Proposes a conceptual 3-component (the innovation, characteristics of the innovator, and characteristics of the environment) framework that integrates and array of variable defined in diffusion research.</td>
</tr>
<tr>
<td>Meade, N. &amp; Islam, T. (2006)</td>
<td>Diffusion of Innovation</td>
<td>Conducted a 25 year review of diffusion modeling literature as it have been adjusted to accommodate for new marketing variables, different stages of diffusion in different countries, and successive generations of technology.</td>
</tr>
<tr>
<td>Malhotra, Y., &amp; Galletta, D. F. (1999)</td>
<td>Technology Acceptance Model (TAM)</td>
<td>This study explores TAM and proposes to establish theoretical and empirical bases for using an alternative theory for conceptualizing social influence in the adoption and utilization of new information systems.</td>
</tr>
</tbody>
</table>
3.5 Social Technical Systems

The model illustrated here identifies and depicts the (3) interrelated dimensions of an organizational work system. Here I have drawn inspiration from two studies (Balloni 2010) and (Geels 2004) where this model is a confluence of concepts proposed within the two studies. The organizational work system is composed of three dimensions:

1. Rules/Institutions – Regulative (explicit, conventional rules that regulate behavior, power systems, and interactions), Normative (values, norms, character presumption, responsibilities, authority systems, and entitlement) Cognitive (properties, symbols, language, paradigms, belief systems, and search heuristics).

2. Technical system – IT and physical infrastructure, production process technologies, product characteristics, skills and procedures, methods of managing artifacts, and problem-solving components.

3. Social System – Human agents, organizations, social groups, distribution networks, users, consumer markets, and media.

An interdependent relationship exists between the (3) autonomous systems, which are components of the socio-technical system. The organizational work system here has (6) types of interaction that should be maintained to achieve systematic synergy (Geels 2004).

1. Social systems – human actors give functionality to the technical system.
2. Social systems - human actors convey and (re) produce the rules mandated by institutions in their activities.

3. Technical systems – artifacts and material conditions shape the circumstances (perceptions, behavioral patterns, etc.) for activity in social systems.

4. Technical systems - artifacts and material conditions shape the rules, frames, principles, etc. of rules/institutions.

5. Rules/Institutions - human actors function (enabled and constrained) within the context of rules mandated by institutions.

6. Rules/Institutions – govern the artifacts of technical systems.

To obtain an organizational working system between the SaaS BI and the digital marketing function there must be a reduction in the distance between the needs of the social system and the performance of the technical system (Whitworth 2009). With a considerable proportion of today’s business activities mediated within the digital arena it is imperative that the structure of on-line interactions be designed to achieve the social objectives of users (ibid). Yet as the interactions depict, interdependence is a crucial element in reaching this goal since the well-ordered structuring of the distinct systems do not function side-by-side but as an entire unit. Here I attempt to simplify the complexity of a socio-technical system being investigated, which is far removed from simplicity, because of the abstractedness, sheer enormity and dynamic relationships of the social and technical involvement (Appelbaum 1997; Whitworth 2009).

In the face of innovative technologies (SaaS BI) and emergent business models (digital Marketing) obtaining competitive advantage is contingent upon change and the adaptability of the STS. One impediment to this concept of forward progression is the fact that artifacts and material networks become deeply embedded within the system creating a sense of stability and technological dependence. Thus enters diffusion of innovation and the maturity process which progresses as a technology becomes more broadly adopted and more readily available (Appelbaum 1997). The more a technology is employed the more knowledge pertaining to its performance and potential is disseminated. As force is applied to the mechanisms of interdependence the rules and institutions that govern the STS must also deviate to embrace technological evolution. Within a large technical system, like the Internet, users of specific technology modify their lifestyles to artifacts and material networks creating economic dependency (Geels 2004). We are witnessing similar behavior with the adaptation of SaaS by organizations that endeavor to lighten the economical commitment to IT while increasing their agility and competitiveness (Kim & Kaplan 2006).
3.6 Business Intelligence

![Figure 5: BI Process (Jaspersoft Corp. 2012)](image)

Traditional business intelligence involves two complimentary environments (data warehouse (DW) and analytical) that interact to produce the intelligence necessary to make informed decisions. The DW environment consists of operational systems and the actual data warehouse where data from multiple sources is integrated and transformed into information. The analytical environment consists of the DW and information delivery where knowledge is created from information. The data resources that support the BI function are usually derived from several different functional areas of an organization.

As shown in the above diagram the data sources often originate from but are not limited to customer relationship management (CRM), enterprise resource planning (ERP), database management (DBM), organizational documents (files), and external data sources (EDS). Often several systems exist within an organization to facilitate business processes such as management (strategic management, supply chain management, customer relationship management), operational (purchasing, sales/marketing, manufacturing, etc.), and supporting processes (accounting, human resources, etc.). Within each business process managed in an organization large amounts of data are produced and maintained within various information systems.

The data acquisition component of the DW is responsible for integrating multiple data types and preparing such data for loading into the data warehouse. The three major parts of this process is data extraction, transformation, and loading where the data is basically cleaned and validated for loading into data warehouse storage area. The data warehouse architecture houses a storage area that can be understood as a ready only data repository where a large volumes of historical data are kept. The data warehouse...
is intended to give support to executives, analyst, and managers by maintaining data in appropriate formats easily accessible for decision-making (Sahay & Ranjan 2008). In the data storage component data is stored in highly normalized frameworks within a management database system.

The architectural approach to the DW is generally addressed in three ways: top-down approach, bottom-up approach, or a practical approach. In the top-down approach the DW serves as a unified repository responsible for delivering intelligence to the entire enterprise. In a bottom-up approach independent data marts are employed to deliver analytical and reporting potential to a specified business areas. In the practical approach a hybrid type design combines the advantages of the top-down with that of the bottom-up approaches that consist of both a DW and conformed data marts. In the information delivery component of the DW users retrieve knowledge in the form of ad hoc reports, complex queries, and KPI monitoring/analytics/forecasting; the knowledge delivered in these varied forms is the basis for the intelligence used to support the decision-making process of a firm.

As BI environments have become more widespread so have information delivery models become more innovative. Information delivery from BI generally comes in the form of ad-hoc reports, queries, KPI’s, alerts, monitoring/forecasting, dashboards, etc. The dissemination of information and data delivery mechanisms basically subscribes to a push model, pull model, or a mixed push/pull model. The push model does not require user involvement once specific parameters are set information can be periodically pushed from a data source to a local server (Franklin & Zdonik 1998). In contrast the pull model is basically a request/response mechanism that requires a greater degree of user involvement and gives the user greater control over when and what type of information is received (ibid).

As consumers obtain considerable access to information and interact more through digital channels information delivery mechanisms that function in real-time, are flexible and interactive creates value for users (Hagel & Brown 2008). The digital revolution has created a much more challenging marketing landscape where the intelligence needed to remain effective. Pull models better support business environment that have an abundance of information, uncertainty, fierce competition, and empowered consumers. Yet the most innovative means of information delivery today are pull models that have push model operability which allows users to request the information that’s needed but still have the option to receive scheduled updates (ibid).
3.7 BI Support Systems

BI support systems (BISS) serve the purpose of supporting organizational decision makers in the decision process by reducing the possibility of cognitive errors and fortifying the capacity of actions (Niu, Lu & Zhang 2009). At a basic level the decision making process is a managerial function that attends to various types of organizational decisions that fall within the boundaries of operations (short-term) to strategies (long-term) (Gorry & Scott-Morton 1971). Decision classification is approached from a dual perspective such as the type of decision problem to be addressed and the decision level to which it is applied. Decision problems are essentially positioned within three categories: structured, semi-structured, and unstructured, and are resolved by either human intuition or computer-based decision support techniques (Niu, Lu & Zhang 2009).

Structured or programed decisions are applied to common problems where adequate solutions can be achieved through standard procedures and thus are suitable for computer based decision support techniques (Malakooti 2012). Programed decisions can account for 90% of the managerial decisions made, this substantial proportion of the managerial workload can be aided by computer (Kopáčková & Škrobáčková 2006; Lu et al. 2007). Unstructured or non-programmed decisions are at the opposite end of the decision spectrum and confront ill-structured problems that require problem specific solutions that are best met through direct interaction and human
intuition (Zada, Guirguis & Sedky 2012). Semi-structured decisions are positioned in-between that of structured and unstructured decisions and maybe resolved through the combination of human intuition and computer-based decision support techniques (Zada et al. 2012).

The organizational decision levels pertain to strategic planning (long-term objectives and resource distribution), managerial control (middle management procurement and productive utilization of resources to achieve organizational objectives), and operational control (decisions the pertain to the efficient and effective performance of organizational work task) (Anthony 1965). The decision making process involves several task that are fundamentally divided into 4 phases e.g. intelligence (intelligence gathering), design (situation assessment), choice (producing and selecting alternative), and implementation (put solution into action) (Lu et al. 2007).

Decision Making Phases:

- **Intelligence Phase**
  - Define a decision problem
  - Determine requirements

- **Design Phase**
  - Establish objectives and goals
  - Generate alternatives
  - Determine criteria
  - Select method

- **Choice Phase**
  - Evaluate alternatives
  - Validate solutions

- **Implementation Phase**
  - Implement solution

Considering the digital revolution that is now upon us, the environment to which marketing decision-making will be reached is dependent on the use of data and analytics (Gopalkrishnan, Steier, Lewis & Guszcza 2012). Marketing decision-making is rarely an individual function but one that requires the attention of multi-tiered management across various organizational units (Bucklin, Lehmann & Little 1998). In many instances computer-based systems (BISS) serve the purpose of employing data and models to find solutions to ill-structured problems (Lu et al. 2007). By automating programed decision-making activities management will be unencumbered by routine decisions and can focus more on solving complex decision problems (Kopáčková & Škrobáčková 2006). Systems capable of automating such decisions are characterized as: supporting management at all levels, supporting both individual and group decisions, supporting multiple decision techniques and processes, adaptable and flexible, interactive and user-friendly, integrates different models and analytical techniques, integrates artificial intelligence and knowledge-
based technologies, capable of accessing a wide variety of data sources, and web accessibility.

In addressing different criteria needs several types of decision support systems exist; yet for the criteria of integrating SaaS BI and digital marketing the system proposed is a data-driven system. A data-driven support system centers on accessing and controlling current and historical data that exist internally and externally of the organization. The decision process is grounded in understanding the homogeneous information output from the system and using it effectively (Zada et al. 2012). A BI support system composed of SaaS components add value to the decision process of marketing managers by delivering information that enhances productivity of marketing activities, better informed marketing decisions, and the customization of marketing activities (Bucklin et al. 1998).

The emergence of a digital revolution has resulted in massive amounts of data being generated at a high velocity from various organizational endeavors. The successfulness of business analytics impacting organizational strategy and the verisimilitude of achieving competitive advantage has resulted in numerous organizations acknowledging the value of leveraging data as a tactical asset (Gopalkrishnan et al. 2012). Massive amounts of data are acquisitioned and generated from various activities and technologies e.g. social networks, RFID, embedded systems, high-throughput experiments, sensory networks, high resolution sensors, etc. A data-driven BI support system composed of SaaS components will increasingly involve big data solutions capable of collecting, processing, integrating, and analyzing enormous datasets for the purpose of improved decision making, insight recognition, process optimization, and real-time delivery (Zada et al. 2012).

Big data analytics are built on advanced analytical and data mining processes for the purpose of detecting concealed patterns and unexplored correlations within large datasets. With the escalation of available data the need for analytically oriented systems that deliver integrated decision support data in real-time have the potential to become practiced reality through big data solutions (Gopalkrisnan et al. 2012). Big data solutions are based on parallel processing, distributed computing, and interactive analysis that supports data storage, indexing, and internal/external data analysis for the protuberant body of big data generated through the Internet and the interactivity of multiple systems (Borkar, Carey & Li 2012). Pragmatically organizations should perceive big data as a means of storing, processing, and accessing their necessary data to function effectively and add value to its customer experience.
3.8 SaaS Business Intelligence (SaaS BI)

Figure 7: SaaS BI Model (Sheikh 2011)

As cloud computing expands in popularity so does the type of applications offered as a service e.g. CRM software, ERP software, accounting software, project management software, email marketing software, collaboration software, transaction processing, web analytics, etc. In continuance with the focus of gaining and maintaining a competitive advantage in ever-fluctuating business markets BI has evolved in its prominence as a necessary function to substantially improve decision making (Sheikh 2011).

As depicted above the concept of BI involves a broad range of applications and information systems that were traditionally developed and maintained behind an organizations firewall (in-house). Through the SaaS BI model data warehousing and analytical technologies are provided through cloud computing vendors and delivered via a web-based user interface. The advantages with this business model are that it reduces a business’s need for manpower, training, office hardware, and the technology involved (Sheikh 2011). Although the objective of providing the capacity to store highly structured data in a DW or data mart that can be aggregated into
valuable metrics the expenditure is drastically reduced with this on demand service (ibid).

Within a cloud-computing environment (hardware & software) SaaS BI is divided into 5 layers made up of on-demand applications and PaaS:

**Platform-as-a-Service (PaaS)**
- **Data Integration Platform** – a software application platform that allows systems engineers the ability to integrate dissimilar applications. This platform handles the ETL function within a data warehouse.
- **Database Platform** – is shared database hardware used for data storage in a data warehouse.
- **Data Warehousing Platform** – is generally the hardware server, an operating system, and a database management system (DBMS).
- **BI Tools Platform** – is the layer that contains the query/reporting, OLAP, and data mining, which are analytical applications that business performance management.

**On-demand applications**
- **BI Applications** – delivers actionable analytics by responding to requests from system users, which transforms raw BI into various forms of specific business analytics.
3.9 Digital Marketing

In the realm of digital marketing a broad range of collaborative activities constitute a digital presence. The activities within a digital presence are interconnected and mediated through a business’s website/landing page. The organization’s website is in a constant state of evolution and moves concurrently to an iterative mix of marketing activities. Here a digital presence (often referred to as an online presence) is symbolic to the traditional marketing-mix where a range of channels, activities, and elements are employed to achieve a successful marketing campaign (Borden 1964). The marketing message is generally delivered by employing either a traditional push marketing strategy (content sent out by a marketer to a mass of consumers) or a contemporary pull marketing strategy (content sent out by marketers as a one time requested by consumers) (Unni & Harmon 2007). The marketing-mix employed to create a digital presence may be accomplished through:

1. **Traditional Marketing** – the utilization of strategies like TV, telemarketing, radio, print advertising, mail, etc.
2. **Market Segmentation** – the process of categorizing a comprehensive market for a specific product/service into homogenized groups (Ferrell & Hartline 2011).

3. **Search Engine Marketing (SEM)** – is accomplished by increasing visibility in search engine results pages. Customarily SEM includes such activities as customer marketing, mass customization, and permission marketing.

4. **e-Commerce** – generally consist of business transactions (buying and selling goods and services) that is carried out over an electronic medium.

5. **Interactive Media** – consist of media types that allows for a dialog between a user and the content owner.

6. **e-Mail Marketing** – involves reaching perspective customers through the medium of e-mail.

7. **Social Media Marketing** – establishing a social media presence for the purpose of building a relationship, interacting, and converting potential customers, generally conducted through social network sites e.g. (Facebook, MySpace, Twitter, YouTube, blogs, etc.)

8. **Mobile Marketing** – activities conducted through an omnipresent system where customers are continuously linked through the use of personal mobile devices (Kaplan 2012).

Although traditional marketing practices appear to be somewhat losing ground they are inbuilt as marketing activities. Digitalization has made the functionality of marketing strategies exceedingly interactive. As seen above a digital marketing strategy assumes an integrated approach that affords marketers the opportunity to select marketing options with the greatest potential to create recognition, traffic, and sales. Each marketing activity illustrated here constitutes to a digital marketing mix that produces an enormous swarm of digital intelligence that consist of but not limited to: customer data, transaction data, social data, click-through data, web analytics, segmentation analytics, social analytics, predictive analytics, content analytics, sales analytics, business intelligence, customer intelligence, competitive intelligence, marketing intelligence, social intelligence, etc.
### 3.10 Diffusion of Innovation

![Hype Cycle](image)

**Figure 9: Hype Cycle (Gartner 2012)**

The Hype Cycle curve is grounded in the convergence of the human perceptions towards the progress an innovation accomplishes and the real systematic progress (Fenn 2010). It indicates the assumption that most innovations will advance through the phases of inflated expectations and disillusionment with a prediction of the expected time it will take to reach the plateau of productivity) entrance of mainstream adoption (ibid). The points indicated in the above illustration give a more lucid interpretation of where an innovation is positioned in response to how investment could be planned and executed.

- **On the Rise** – the technology (innovation) trigger phase is understood as a period of rapid deployment and increasing interest.
- **At the Peak** – the technology has transcended the initial phase and has reached the peak of its hype. At this point it is being touted as the next big trend to adopt and receives a fair amount of attention from trade a business publications.
- **Sliding into the Trough** – The technology has some how not reached the overinflated expectations within markets and media. This is where we begin to see updates to technologies based on feedback.
- **Climbing the Slope** – at this phase the reputation of the technology has begun to rebound from the trough as it becomes more widely used, this is where we will witness next generation versions of products/services with
improved performance and concepts/tools are produced to simplify the
development process.

• Entering the Plateau – this phase is the inception to mainstream adoption
and an innovation’s usefulness is foreseeable and broadly accepted. Once a
technology enters into this phase there is perceivably a convincing body of
knowledge pertaining to its usage and deployment.

Each Hype Cycle innovation is assigned a category pertaining to the length
of time it is projected to reach the Plateau of Productivity from its
contemporary position. The 5 categories assigned are: less than two years,
two to five years, five to 10 years, more than 10 years, obsolete before
plateau. New technologies are seen as progressing at two speeds either
normal or fast track. At a normal hype cycle speed an innovation may
require years to progress through the Hype Cycle, while when an
innovation is on a fast track Hype Cycle it could reach maturity within 2–
4 years. It has been noted that the difference between fast and normal track
innovations is that normal innovative speeds are grounded in long-term
documented research and development while fast track innovations are
constructed on the viral melting pot of the Internet (Fenn 2010).

The hype Cycle above has been plotted in accordance to the current positioning of BI
related technologies. Such technologies contribute to transactional, interactive, and
social data that gets funneled into intelligence.
• **Big Data** – high volume/velocity information assets that require cost productive/ingenious methods of information processing that provides understanding, process automation, and decision-making (2 – 5 yrs.)

• **Social Analytics** – gives marketers the opportunity to recognize attitudes and trends that identify customers’ opinions. Mainstream adoption (2 - 5 yrs.)

• **Mobile BI** – relates to the dissemination of business data to mobile devices. Mainstream adoption (2 – 5 yrs.)

• **SaaS BI** – business intelligence offered as a cloud computing service, major components are analytic applications, Bi platforms, and information management infrastructure. Mainstream adoption (2 - 5 yrs.)

• **Content Analytics** – is a collection of analytical technologies that deal with content e.g. documents, blogs, news sites, customer conversations, and social network discussions. Mainstream adoption (5 – 10 yrs.)

• **Text Analytics** – extracting information from textual content, a method of preparing textual data for a quantitative form of analysis. Mainstream adoption (5 – 10 yrs.)

• **Real-time Decisioning** – this technology integrates predictive analytics with decisioning capabilities to recognizing the next best course of action to be taken, also referred to as intelligent decision-management. Mainstream adoption (2 - 5 yrs.)

• **SaaS** – software that is owned, delivered, and supported by remote vendors. The service is delivered upon demand in accordance to a service license agreement (SLA) (2 - 5 yrs.).

• **BI Systems Integration** – a method of bringing independent systems components together for employment within the BI process. Mainstream adoption (5 – 10 yrs.)

• **Social Media Monitors** – is a service app that follows subject matter when it is referenced in social media. Mainstream adoption (less than 2 yrs.)

• **Web Analytics** – applications employed to interpret and enhance online channel user experience and to support optimization work in digital marketing. Mainstream adoption (less than 2 yrs.)

• **Predictive Analytics** – techniques for analyzing historical and transactional data to make future predictions. A data mining approach based on prediction, rapid time-to-insight, business relevance, and ease of use. Mainstream adoption (less than 2 yrs.)

• **BI Platforms** – involves a range of technologies DW database, OLAP, data mining, interfaces, etc. deployed within an infrastructure that has the capacity to execute the BI process. Mainstream adoption (less than 2 yrs.)

According to the Gartner Hype Cycle SaaS BI is positioned in the Trough of Disillusionment. Although the SaaS BI service is seen as an emerging technology with moderate business benefits, SaaS BI as a concept encompasses technological innovations from such business functions as customization, decision support, and big
data. The innovative technologies above represent the body of components in the business intelligence Hype Cycle; their diffusion into mainstream adoption can be inferred as affirmation that SaaS BI and BI tools depict roles of growing importance to business activities and strategies.

### 3.11 Results from the Theoretical Study

The results of the theoretical study are intended to show the relevance between the research question and the subject areas investigated. Through applying the identified concepts to the research sub-question I have in application composed a systematic structure of these concepts to gain a better understanding of the research phenomena.

Research Sub-question:

What components and interconnections are necessary for modeling the interactions between SaaS vendors and their client-organizations?

Approaching the proposed conceptual model as that of a socio-technical work system section 3.5 (socio-technical systems) illustrates the importance of modeling various components to represent the social, technical, and organizational sub-systems. Understanding that the target domain consists of a service provider/client dyad, the representations of these components are necessary for illustrating the interactions that transpire between them.

**Business Entity**

The business entity represents the client-organization as well as the organizational sub-system. As a client organization of SaaS BI an organization subscribes to an on-demand service provider for the rights to use the specified software. As an organizational subsystem the client-organization represents the regulative, normative, and cognitive rules and process of an organization.

**SaaS Vendor**

The SaaS vendor is another crucial component that is necessary for mapping the interactions of the digital marketing and SaaS BI processes. From a socio-technical perspective it is understood that the technical sub-system is composed of SaaS software and hardware. The SaaS BI concept investigated in this study depicts the entire SaaS BI infrastructure but for my intended purpose this is redundant since by depicting a SaaS BI icon it would in fact be representative of, but not limited to a web interface, BI applications, BI tools platform, data warehouse platform, database platform, and data integration platform.

**External/Internal Stakeholders**

The stakeholders of the client-organization are also necessary components for modeling the interactions between digital marketers and SaaS vendors since from one perspective they are in essence the target audience of the client organization functions. They can further be divided into internal and external stakeholders and viewed as two subsets of the social sub-system. The external stakeholders are the
visitors that marketing activities are designed to convert, and the internal stakeholders are the customers and organizational work groups and individuals that are responsible for economic transactions and work task.

**Decision Process**

The decision making process is another important component that should be represented in the conceptual model since it is directly impacted from the SaaS based intelligence. Although the decision making process is fueled by data driven support the process is facilitated by social interaction and in accordance should be represented as part of the social sub-system and internal stakeholders. As illustrated in section 3.7 the decision making process should reflect the four phases (intelligence, design, choice, and implementation).

**Digital Presence**

The digital marketing mix is another important component that should be represented in the conceptual model of the target domain. Section 3.8 illustrates these marketing activities as existing within an organizations digital presence. From the explored literature it has been established that the most effective way to market digitally is for an organization to create and maintain a digital presence. The digital presence model that I proposed within this study consists of an organization’s website/landing page as a core activity that interacts with various marketing activities. The value placed on this component is very high since it will receive input from the SaaS vendor, client organization, and external stakeholders.

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**Figure 11: Marketing Artifact Components (Hall 2012)**

Areas of interest primary to this thesis are:

1. **Actionable Information** – convergence of various forms of intelligence/analytics to support the decision-making process.
2. **Digital Marketing Mix** – digital marketing activities.
3. **SaaS Vendors** – companies providing data gathering applications.
4. **Business Entity** – client organizations that subscribe to SaaS.
3.12 Proposition for an Empirical Study

The empirical study serves the purpose of verifying theories and concepts that have been examined in the theoretical study of this thesis. The empirical study will affirm whether the subject areas of BI, SaaS, and digital marketing have been established adequately for answering the research question. Since no one method of research can be expected to fully encapsulate a research phenomenon both a theoretical and empirical validation are conducted to assure consistent relevancy between the chosen concepts. The technological concepts set forth in the theoretical study allow me to approach ICT with the conviction that it serves as an information-processing tool, productivity tool, social relations tool, structure, entity of diffusion, and a model. By conducting an empirical study a relationship will be established that investigates whether SaaS tools are in fact being utilized too provide marketers and management with the digital intelligence necessary to understand customers and make better-informed decision. The empirical evidence generated as a result of data collection will be used to support the build decisions made while constructing the digital marketing & SaaS BI model.
4 EMPIRICAL STUDY

The empirical study of a thesis is a critical element since it is used to support the scientific method employed, this is achieved by testing an investigated theoretical body of knowledge against what we can observe and measure about a phenomena (Perry, Porter & Votta 2000). In this thesis a research case is used to investigate the phenomena digital marketing augmented through SaaS BI. By using a data gathering method of semi-structured interviews Interview participants have been enlisted that possess knowledge privy to this thesis in order to gain their perspectives on the chosen phenomena. The type of research case employed here is a short-term exploratory study based on a critical case and convenience of the MeltWater Group, a SaaS vendor. The generalization I seek to achieve from this case study is to build a new theory in the form of a design model that will be developed through iterative build & evaluate phases.

The population of interest for this empirical study is SaaS vendors that offer applications that provide valuable customer insight through intelligence gathering and delivery. But in reality the population of existing SaaS vendors is extremely large to be studied directly so I chose to select a sample from the SaaS vendor population that meets my desired criteria. I based this sample population on the very basic criteria of companies that take an integrative approach to the SaaS business model in relation to supporting organizational decision-makers and those that have received recognition for such services. I chose the MeltWater Group from a sample population of 20, social media monitoring vendors for business, that I identified through Socialmedia.biz.

The MeltWater Group is a global company founded 2001 in Oslo. The company, which specializes in providing media monitoring and serves about 20,000 corporate clients, employs over 800 employees within 57 offices positioned throughout Europe, North and South America, Asia, Africa, and Australia with its headquarters in San Francisco, USA. MeltWater began as an entrant into the traditional press clipping market and introduced a technological innovation (Magenta News) that quickly surpassed the competition. Building on its accolades MeltWater was reinvented in 2009 as a SaaS company that offers 6 prominent SaaS solutions: MeltWater Buzz (social media monitoring tool), MeltWater News (media monitoring tool), MeltWater Press (media contact database), Meltwater Reach (search engine marketing tool), MeltWater Drive (collaboration tool), and MeltWater Talent (talent management tool). In accordance with the SaaS model these core business solutions offer organizations the ability to extend their external intelligence management competencies through a service that is highly accessible, cost efficient, upgradable, adaptable, and scalable.

In May of 2012, I first made contact with the senior insight analyst at the Meltwater Group, after a few weeks of dialogue she agreed to be my overseer at Meltwater in
reference to the thesis proposal I had submitted. Through my contact with the senior insight analyst I was given access to other MeltWater employees such as communications manager in the Copenhagen area, which whom I tested and tweaked my interview questions and eventually the Nordics marketing communications manager who introduced me to my interview participants. Understandably, I was not allowed access to MeltWater’s client list, which includes both local and domestic clientele from small entrepreneurs to global enterprises.

4.1 Interview 1
The first research participant interviewed was an account manager at MeltWater. He has a degree in economics and marketing from Lund University and has been employed at Meltwater for one and a half year. Initially he began working at MeltWater as a sales consultant where his work task was to enlist clients for social media surveillance services. But for the last six months he has worked as an account manager with what he calls ‘client success’ where he is ‘working with existing clients making sure that they are happy with the services and that they are using the services as they should.’

Many SaaS vendors provide services that very much resemble BI tools instead of a traditional BI environment where all the components exist behind a company’s firewall with limited from external data sources. Every company that engages in marketing must establish and maintain a digital presence that involves e-commerce, social media, e-mail marketing, etc. The job of facilitating this digital presence is often delegated to one to several employees who must gather and analyze an ever-growing amount of external data.

When asked what occupational roles his clients hold, for the purpose of assessing their connection to the function of marketing, he replied:

‘If you look at the sign off, not the one that is actually getting the service it is from CEO's, CMO's, and CFO's so the spectrum is pretty big, it depends on what type of company it is because the users are different depending on how big the company is, but overall it's mostly marketers but CEO's and sales as well.’

In an effort to formulate design principles for marketing that integrates intelligence generated through SaaS I think that it is of importance to explore motivations for subscribing for this type of service. By traversing company documented case studies at MeltWater I was able to arrive at the understanding that some of the reasoning for subscribing surrounds a need to understand the functionality of social media and to have a solution that is accessible, easy to use, easily deployed, customizable, can be integrated and manage various social web accounts. Many view MeltWater Buzz as a sale, monitoring, and engagement tool, he responded by saying:
‘Well I think the main reason they are choosing SaaS is because of the need to be on top of things I think that that's the main focus why companies are getting SaaS for the need to be alerted as soon as something critical is said about your company.’

Assembling an understanding of how various forms of intelligence are gathered through SaaS and delivered not only establishes preferred methods of delivery but also speaks to the impact specific mediums have on society. Here I asked how are the SaaS updates delivered to clients, participant 1 responded by saying:

‘On a daily basis we are using reports that are sent through the system and into their (clients) mailbox, clickable data reports, but of course you can log into the system where you can get information from another perspective. So one is the daily reports, the second one is the actual system that you can login onto, also you can setup alerts.’

Being able to customize the various types of intelligence SaaS delivers is critical since not every business employs identical metrics to measure marketing/business performance; in this sense actionable intelligence is individualistic depending upon the recipient. Users should be given the option to choose ‘if you want global surveillance or you just want to look in Sweden or Scandinavia…for that reason you can tailor it however you like.’ The need for customization also extends to the data type where the results may be delivered in qualitative or quantitative form may mean learning a special skill set to effectively analysis data. His response to this was, ‘it’s real easy to use…you can choose if you want to see all the text or if you want to see a graph or you want a word cloud’

From the theoretical study I have identified several authorities that propose that the adaption of SaaS marketing/analytical tools have accelerated in recent years. Participant 1 agrees with this assessment by adding that, ‘Yeah, it’s definitely increasing...I would say the awareness of information overall has increased...the awareness of SaaS has increased a lot’ Traditional marketing tactics have been reengineered to be less invasive since they were ineffective at retaining publics attention as they once did. Instead mediums such as social media have been coupled with marketing since it allows marketers to interact with potential clients in a social space that is in constant evolution. Reflecting on how the marketing attitude has changed he states, ‘I think that we are getting so much information due to the last years we are overloaded with information…right now I think that we are more selective about what type of information we want.’
The two fundamental activities that are distinguishable within the designing of an artifact are building (designing an artifact for a distinct scientific purpose) and evaluation (determining how appropriately the artifact functions) (Schön 1983, p.254 as cited in Helfert & Donnellan 2012). The evaluation of a design artifact should be based on (a) criterion set by the artifact designer. In this thesis the evaluation criterion is perceived as guidelines for achieving a preferred condition, which are critical to the design science process (Borek, Helfert, Woodall & Parlikad 2012). The evaluation method I will employ here is of a descriptive nature that will ascribe to the quality attributes of interoperability and conceptual integrity.

Achieving interoperability within a design science artifact pertains to its ability to provide and convey actionable information across multiple systems, applications, or components relevant to multiple stakeholders (Gasser & Palfrey 2008). Stakeholders here include, but not limited to internal users and external stakeholders (customers/potential customers, information users, trusted external users, owners/sponsors, society). The design artifact that I propose here represents an interoperable IS/ICT ecosystem; cast against the backdrop of digital marketing I will examine the interplay between SaaS, marketing activities (digital presence), digital intelligence, the organization, and its stakeholders.
Achieving conceptual integrity within a design science artifact pertains to the artifact's ability to serve as a source of innovation while enabling design flexibility (Wong 2003). The greatest capacity for achieving conceptual integrity while designing an artifact is to have a good interpretation of the distinguishing and synthesizing viewpoints of the stakeholders involved (ibid). Design artifacts that integrate organizational work systems with external data gathering technologies must take into account the complex relationships and dynamic processes that exist with the business environment.

In the reverence of system design Brooks (1995) contends that the most significant issue to be considered is conceptual integrity. As system designers our task is to design systems that are easy to use without sacrificing functionality. Yet as Brooks (1995 p. 43) states, ‘Neither function alone nor simplicity alone defines good design.’ But with functionality as our guiding force we must pursue simplicity and balance conceptual complexity. Cast into the role of ‘user’s agent’ a system designer must wield professional and technical knowledge when applying one's craft and not allow the functions of system design and system implementation to intermingle (ibid). With this in mind I strive for conceptual integrity of the design artifact attempting to depict what happens within the modeled processes and as opposed to how it is made to happen. This design artifact is to be understood as a special-purpose tool for the function of digital marketing, yet users with such interest are not explicitly limited to digital marketers.

The SaaS vendor, MeltWater, offers a suite of software solutions that encapsulates new/social media monitoring, search engine marketing, media contact database, online collaboration tool, and a talent management. As a result of interviewing the first participant I was able to gain a better understanding as to the information interchange that takes place between the dyad of SaaS vendor and client. Within my design artifact I have positioned the various areas of interest into that of a closed loop. This serves the purpose of gaining a visual representation that depicts a cause and effect aspect of specific actions. The formation of a closed feedback loop entails that inputs do not remain independent of outputs and can account for much more complex processes than what could be depicted in a open (linear) loop (Fowler 2003). This is also representative of a closed BI loop that would begin in the client organization (define problem and select method), proceed to the SaaS vendor (gather data and model data), return to client organization (report finding and analyze).

An organization’s web site is position in the center of its digital presence; this serves as a landing page or point of origin for the business clients. But more interestingly it should also seen as the point of integration since all digital marketing mix activities either overlap or are directly linked to an organization’s websites e.g. traditional marketing, market segmentation, SEM, eCommerce, interactive media, e-Mail marketing, social media marketing, and mobile marketing. SaaS applications that maybe integrated into these specific activities are: MeltWater Reach (SEM), Shopify
(eCommerce), APSIS (e-Mail Marketing), MeltWater Buzz (Social Media Marketing), SalesForce (CRM), Google Analytics, MeltWater Drive (collaboration tool), NetSuite (ERP & financial), MeltWater News (media monitoring), Rackspace (global app monitoring) and IBM CoreMetrics (marketing management). Of course behind organizational firewalls there are a host of applications that can be integrated with internal information systems.

Over recent years interoperability amongst online vendors has grown pervasive, this is due to the convention of web developers publishing application-programming interfaces (API’s) in order to allow for web 2.0 most basic commonalities known as mashups (Murugesan 2007). This activity is a widely practiced social trend that enables web users to stay updated with emerging content and helps to congregate collective intelligence (ibid). The exploitation of such social media networks is the reason why I chose the activity of social media marketing as the central point for input flow from the client organization. The first participant’s interview illuminated the value organizations placed on social media as a gateway to customer insight and as a marketing platform. Data collected from various marketing and customer engagement activities flows through the SaaS vendor’s integration platform where it can then be categorized and disseminated as output back to the client organization as digital intelligence.

4.2 Interview 2

The second research participant interviewed is a business developer at the MeltWater Group. She has been with MeltWater some 15 months and, similar to participant 1, began her career in sales, working as a sales manager. The second participant’s work tasks involve creating new business opportunities and communicating new product development to clients. ‘What I do mainly these days is keep contacts with our clients...keep them happy and see that they have business opportunities in our other services.’ As she explains many of their clients subscribe to media monitoring services but are unaware of the marketing opportunities that exist within. ‘Our clients mainly have media monitoring tools...but then we have social media applications where we can build Facebook competitions and we can do press releases and stuff like that as well.’

From a business developers perspective I wanted to understand with whom it is that she communicates most with within client-organizations. ‘They are communication manager, information managers, or marketing managers, but it’s mainly decision makers.’ By asking her this question I was also able to discern the division of labor within this intelligence gathering activity, ‘When the decision maker has signed a deal we often communicate with the ones that are operationally accountable...so we talk to marketing assistants as well.’ When traversing through Meltwater’s client statements I see that her response is consistent with the titles of clients attesting to Meltater’s service e.g. director of digital strategy, head of strategy implementation, marketing manager, digital marketing manager, director of digital marketing, etc.
Continuing to explore motivations for subscribing to SaaS participant 2 admits that such factors are greatly influenced by a need and is based on who the client is and what type of market they compete in. MeltWater’s client statements have included needs such as advanced key word searches, passive listening, engagement, the ability to track and measure social threads, or to get an assessment of their public image.

‘When a customer asks us for a service they don’t actually tell us straight forward about their needs…we do this by asking them questions…we try to focus to understand their business so if it is a selling company what type of sales do you do, how do you do it…if you work with a governmental organization they might just need critical information written about them in media so it depends on the need really.’

Staying abreast of information delivery needs of clients MeltWater engages in both push and pull approaches. A push approach entails the delivery of daily e-mail reports, while a pull approach comes in the form of an online platform that can be accessed and queried on demand. Both push and pull approaches are necessary however, pull approaches to information delivery enables a higher level of control allowing users to customize when and what type of information they receive (Brocato 2010). ‘We have a platform online where they can login to the service and do the research themselves … but they also get updates everyday from us in the emails.’ In reference to the type of data they provide she contends that quantitative data comes pre-analyzed in the form of excel sheets and graph charts but, ‘we are an information technical organization so we can give them everything online…but they have to do the qualitative analysis themselves.’

In the past many organizations have been reluctant to outsource specific IT functions based on information and data security. This is one of the reasons why many SaaS vendors have positioned themselves outside of organizational firewalls and chosen instead to provide analytical services to external data. I was curious to know what type of data is integrated into the services Meltwater provides. ‘It’s mainly external information…everything outside the firewalls…so we gather all types of information outside the firewalls.’ She did admit that there are instances where internal data can be integrated into the reports that they send out but the client company handles this internally. When asked her opinion about SaaS adaption she responded by saying,

‘I think it’s increasing because it’s quite an effective way to use us (SaaS vendors)...some organizations have PR agencies that do this for them but this is a way for them to own their own competence and have this knowledge in house instead …so I would say that this is a better way to get knowledge than to outsource it and have someone else do it for them.’
Normally within internal information integration systems a learning curve exists that requires designated employees to have a specialized skill set. Many organizations that continue to operate within these boundaries invest a lot of resources into locating and acquiring such competence. Another added benefit of SaaS is that data analysis can be done with little specialized training, ‘actually they get the education from us... they don’t have to know that much about the service they just have to have an information need so once they have that we educate them on our systems.’

4.2.1 Build & Evaluate 2

With the second phase of the design artifact I continued to seek interoperability and conceptual integrity. In an effort to make my design more interoperable I constructed closed intelligence loops amongst the information flows of identified systems. The SaaS vendor and the client organization are represented as two systems that achieve interoperability. This entails that the information flows between the two systems are symbolic of two-way communication (sender-receiver-feedback) where the client organization directly communicates with the SaaS vendor and the feedback can be sent either in the form of digital intelligence or in any other informational type through the communication pathway that by-passes the digital intelligence spectrum. I feel that this other communication by-pass is a necessary depiction because relationship building communication may not logically fall within the boundaries of digital intelligence. Since relationship building enlists a multifaceted approach this must also be illustrated within the design artifact. From the client organization to
SaaS vendor multiple message types maybe communicated but by illustrating the digital intelligence spectrum between the SaaS vendor and client organization it may be inferred that this is the only message type communicated. So the information by-pass around the digital intelligence spectrum is necessary to show that other message types exist.

Taking into consideration the second participant’s insight as a business developer and her desire to understand the client’s need I interpret that multiple forms of media rich communication must be employed to build business relationships and establish an element of trust. I have also formed an intelligence loop between the SaaS vendor and the digital marketing mix. The digital marketing mix, although consisting of multiple activity systems, can be conceived as a network system with interoperable components. Here the SaaS vendor sustains multiple links between the service application and the marketing activities. This communication may be represented in the form of media richness, intersystem communication, or IP interconnectivity. What is important here is that whichever systems are monitored/mined for intelligence can receive input and send output between itself and the SaaS vendor.

The digital marketing mix network system also forms an intelligence loop with the client-organization’s customers and visitors. The customers represent individual/businesses that patronize the client organization and the visitors represent those individual/businesses that are potential customers. When customers/visitors interact with any of the digital marketing mix activities valuable data is extracted and output to the SaaS vendor, notice here I have also shown that the digital marketing mix activities are capable of communicating directly with the customers/visitors. In the earlier design a critical information pathway had not been ignored, I assumed that the client organization interacted with the digital marketing mix activates and that the customers/visitors did the same. However these two interactions are implicit since the client-organization and its customers/visitors could possibly interact as a result of the digital marketing mix activities, but this is not an absolute. I established a direct two-way communication between the client-organization and its customers/visitors since this is a logical interaction that must be made permissible. An information pathway flow is also established from the digital marketing activities back to the client organization. This is done to account for the data gathering applications that maybe positioned behind and organization’s firewall and don’t allow for an external mediator.

4.3 Interview 3
The third research participant interviewed is a senior insight analyst at the MeltWater Group. She comes from an academic background of finance and accounting with a specialization in marketing. In addition to sales analysis, sales trend analysis, and financial analysis she describes her daily task as:
‘I analyze the data coming from our all of our digital marketing campaigns, I put together an analysis of how well we are doing, also translate that data into actual dollars spent per campaign…dollar spent per lead we generate…and time to complete sale.’

Participant 3 was not given the same interview guide as participants 1 & 2; instead I developed another interview guide tailored specifically for a digital marketer. Since digital marketing is such an important concept to this thesis I wanted to get her description of what it entails:

‘For me digital marketing is all of the marketing ventures that you do that entail any type of online marketing or any type of marketing that doesn’t require you to be face-to-face with the customer or speak to the customer over the telephone…so that can be anything from email marketing to webinars to content marketing which includes putting white papers out there.’

As she began to describe the breadth of SaaS products she uses in her marketing campaigns it became clear that working for a SaaS vendors held no sway over the type of products she employs in accomplishing her work task e.g. Marketo, Google Analytics, Google Ad Words, Spyfu, and SAS. She confirmed that all of her intelligence gathering for marketing is made possible through SaaS. In comparing traditional intelligence gathering to intelligence gathered through SaaS she had a clear understanding that although valuable intelligence can be gathered in both manners the preference of which works best depends on the organization’s need.

Organizations with a data and information security concern will almost exclusively go with traditional on premises BI tools and methods for most organizational functions. ‘Businesses we are finding using SaaS products are your small to medium enterprises that can be more agile that don’t have such high security needs.’ However when the need arises to gather intelligence for digital marketing the rules are somewhat skewed. Participant 3 explains, ‘If you are interested in BI for social marketing…or BI gathered from any type of marketing campaign you can use SaaS because you are not as concerned with security and you are not holding information.’

Digital marketing splits from traditional marketing on several fronts but the most fundamental way that they differ are in marketing orientation. ‘Traditional marketing it wasn’t so much of having a personal relationship of building a personal trust with the customer.’ The traditional approach ‘relied on quick sound bites and snappy headlines to get peoples attention…now a days people are less inclined to give you 30 seconds of their time.’ Digital marketing is about finding innovative and creative ways to market to consumers without them knowing that they are being marketed to.

‘That’s where digital marketing comes in that’s the whole webinars branded as e-learning or why we create white papers or why we create news letters or why the most
popular form of digital emailing is the news letter cause the news letter hides the marketing message and packages it in a way that makes you feel as if you’re getting a personalized bit of learning.’

Creating a digital presence is no longer an option when it comes to digital marketing, it is the first order of business when interacting with your customers. A digital presence is constantly evolving which entails that a business’ digital marketing strategy is also dynamic, continuously evolving. When I asked her to give me an example of her marketing strategy she replied, ‘I think the most important one is content marketing and that is again repackaging the marketing message in a way that people feel as if they are getting a piece of education out of it.’

However a marketing strategy must be congruent with the type of business an organization participates in because as she points out, ‘from a B2B point of view content marketing is creating white papers, webinars or something that is interesting and educational.’ A marketing strategy has a different *modus operandi* when it dealing with B2C, ‘In a B2C market your content marketing is about providing something that people want…something cool that allows them to feel like they have a personal relationship that their friends don’t…something that makes them feel like an elite group.’

The very essence of creating, designing, developing, or subscribing to BI tools is that it gives an organization the potential to make better-informed business decisions. The decision making process is the pinnacle of the entire data collect, transformation, and analysis process and therefore must be represented in my design artifact. Since marketing is the organizational phenomenon under investigation I asked her about who is involved in the marketing decision process. ‘It’s split up between directors with the CMO setting the brand messaging that everyone else needs to make their segments follow and then you have the analytics team that tells them if that brand message is on point…if something is wrong.’

One notion developed in the theoretical study that needed affirmation was how important is the intelligence/analytics to the marketing decision process since I have depicted it as one of the major outputs within my artifact. ‘It’s very important we need to constantly monitor quite a few statistics…so our analytics lets us know if our message is on target, on point, or if we are missing it entirely’ Marketers or the marketing department, for that matter, does operate as an independent silo and must receive intelligence/analytics from other organizational units in the decision process. ‘They receive cross-functional involvement so sales operations and sales teams have a very important role in marketing campaigns.’

With all the information we hear and read about social media and social media marketing one might infer that it would be a well-understood concept, yet for many organizations it is still a stab in the dark. ‘One of the biggest trends we see toward
social media analytics tools...is that people don’t understand what social media is for...they just know they should be there.’ Again this goes back to what business segment an organization performs in, since the B2C market is all about selling an image while the B2B market is all about stability, security, and solutions that work.

Information delivery is also an important concept within the BI process since it has the ability to increase the relevance of the intelligence. The delivery of information is basically measured in two forms; push (having information sent to you on a periodic basis) vs. pull (requesting more specific information as it is needed). When I asked about her preference she responded by saying:

‘I prefer to pull the information so I don’t have information overload and I can create the reports that I need and I can answer the questions that I need to answer...having the data pushed to me could mean that I’m not answering the right questions or that I’m losing sight of the right question and not doing the proper analysis.’

Like any other phenomenon digital marketing has its challenges that range from metrics/analytics to proper marketing budgets. The space for marketing and how it’s performed has increase within more customer driven markets. This is especially realistic in digital marketing since SMB’s are able to compete on a more level playing field where innovation is not solely based on finances anymore. Participant 3 sees the challenging aspect of digital marketing as, ‘trying to hit the customer in the right buying cycle and creating content that is relevant to them in that cycle and being able to accurately split people up and create messages tailored to those different parts of the buy cycle.’

The marketing mix continues to remain at the heart of the marketing campaign; it serves as both the vehicle through which the marketing message is carried and the catalyst that propels the data generation process. As identified in my design artifact the digital marketing mix are the various marketing activates that constitutes a digital marketing presence. Intrigued to gauge the utility of my representation I asked what her ideal marketing mix looks like:

‘I would say my ideal digital marketing mix is email coupled with interactive marketing... from an advertising and outreach point of view it’s all about SEO and SEM marketing market...segmentation is incredibly important if you’re not properly segmenting your customers and you don’t know who your ideal customer is then your marketing is going to fail anyway!’

Throughout this entire investigation process I have been searching for validation that SaaS is a beneficial toolset for achieving marketing success. Yet to have a successful marketing campaign organizations must concretize a strategy that extracts the most strategic value from SaaS tools. So the value of specific SaaS tools can differ from organization to organization and marketer to marketer. She perceives its value as, ‘it
has been completely beneficial because SaaS products have given me the ability to access my information on the fly, that can actually improve your creativity and that’s awesome!

4.3.1 Build & Evaluate 3

With the third phase of the design artifact I decided to represent the decision-making process since it’s an indispensable component within the BI and marketing processes. In an effort to increase interoperability I repositioned the business entity to a more central position placing it at the epic center of the system’s processes. A good deal of thought was given to how to represent the decision making process and where to position it. According to the third research participant the decision making process is accomplished by a joint effort in several steps. So I combined this with the knowledge obtained from the theoretical study and depicted it as an iterative process that consist of the intelligence phase (where various forms of digital intelligence is deeper scrutinized and aggregated to increase relevance) the design phase (where alternative options are examined and an optimal choice is selected) and the choice phase (where the chosen decision gets selected).

Since the decision process is driven by human action and based on the third participant’s response I depicted the process as a social system internal of the organization and aligned it with the external social a system. The internal social system (users) may include, but not limited to: end-users, business users, business
management, and business strategy management. This representation of the decision process is also congruent with the four-phase decision process depicted in the decision support diagram from the 3rd chapter section 3.7.

Figure 15: Decision Process (Hall 2012)

The information flow (depicted in red) shows the iterative process of decision-making that receives input from SaaS digital intelligence. The process advances form the intelligence-to-design-to-choice phase. This process takes place internal of the organization yet the decision implementation must be approved and initiated by the organizations authority system, if for any reason the decision is not approved it can be looped back to either the design phase or the intelligence phase.

I also chose to label the multiple closed-looped processes numerically so that the information flows could be explained and tracked more easily. The conceptual model has seven processes labeled (1,2,4,5,6,7), which represent six closed-information loops, and (3) which is an alternative informational flow.

1. Represents a closed information loop between SaaS vendors and a client organizations digital presence.
3. This information flow depicts an alternate information flow route for messages sent from the SaaS vendor to the client-organization that does not involve digital intelligence.
4. Represents a closed information loop that exist (internal of the organization) between an organization’s social system and its decision making process.
5. Represents a closed information loop between an organization and its digital presence.
6. Represents a closed information loop between an organization and its customers/visitors.
7. Represents a closed information loop between an organization’s digital presence and its customers/visitors.
4.4 Results of the Empirical Study

As a result of the empirical study in which I interviewed three research participants from the MeltWater case I was able to employ the collected data to answer the research sub question and construct a conceptual model through an iterative build and evaluate process.

Research Sub-question:
What components and interconnections are necessary for modeling the interactions between SaaS vendors and their client-organizations?

Since the components of the conceptual model were identified in the theoretical study I employed data collected from the three semi-structured interviews to guide me in positioning the components within the design space and plot their interactions.

Although the conceptual model exists within an open system where specific components can be affected by elements external of the system. The interconnections between the components of the model are more functional if plotted as a closed feedback loop since it provides a better environment for process adjustments and reengineering.

**SaaS Vendor & Client-Organization Information Interchange**
A necessary component is to establish the information interchange between the SaaS vendor and the client-organization since this is the service provider/client dyad that will dictate the workflow of the system. This information interchange also represents an information delivery system by which a SaaS vendor can either push digital intelligence to its client-organization or a client organization can pull digital intelligence from the SaaS vendor.

**SaaS Input-Output Processes**
Another necessary component is to establish the external and internal input-output processes of the SaaS vendor. These processes are essential to the conceptual model because they depict the service provided by the SaaS vendor as well as establish the information value chain. The external process is the (input) implementation of a SaaS solution within the digital presence and the (output) extracted marketing data. The internal process is the (input) extracted marketing data and the (output) data transformed to digital intelligence.

**Decision Making Process**
Another necessary component is to establish the interconnections of the decision making process. A pivotal input-output process is conducted within the client-organization where digital intelligence is input to the decision process and an adjustment to one or several marketing activities is the output. As established in the theoretical study this process represents apart of the social sub system where the interconnection is intended to depict the iterative steps of a four-phase process. In an effort to achieve model simplification the fourth phase (implementation) is located within the authority system of the client-organization.
External/Internal Stakeholders
Another necessary component is to establish the interconnectivity of the external/Internal stakeholders with the client-organization and its digital presence. Customers/Visitors interact with the client-organization’s digital presence through interaction systems or digital marketing activities, this engagement allows for the collection of marketing data critical to the marketing process. A closed feedback loop is necessary for direct interactions with the client-organization in the form of customer relations.

Digital Presence
Another necessary component is to establish the interconnectivity of the digital presence. Based on empirical data collected digital marketing activities are linked through an organizations website where conversion becomes possible.

Model Specifications
Another necessary component is to establish the labels of the information interchange processes. The conceptual model attempts to capture the complexities that exist within the target domain yet recognition of one process form the next can be simplified by attaching distinguishing labels. This is performed in an effort to identify specific processes with their specified descriptions.
5 ANALYSIS AND RESULTS

Frame of Reference

A frame of reference is intended to create a space in which the results of this thesis are presented and analyzed. The frame of reference here is grounded on a comparison of the results from the theoretical and empirical studies. In both studies the results were employed to answer the research sub-question that underpin the main research question, ‘How can marketers integrate SaaS-based intelligence into the digital marketing process?’

Grounds for Comparison

In the theoretical study I investigated multiple concepts that interconnected the phenomena of digital marketing, SaaS BI, and diffusion of innovation. Through the identified concepts in the theoretical study I was able to gain an understanding of the existing intricacies of the research phenomena. This allowed me to answer the research sub-question and identify the components necessary for modeling the target domain. In addition to the theoretical study I conducted an empirical study that cross-referenced the concepts revealed in the prior study that supported me in the iterative domain driven design process of build and evaluate. Through this process I was able to achieve a design that communicates the evaluation characteristics of interoperability and conceptual integrity.

5.1 Comparative Analysis

The research sub question: ‘what components and interconnections are necessary for modeling the interactions between SaaS vendors and their client-organizations?’ helped to guide me in designing a conceptual model of the target domain. This was achieved over the course of the theoretical and empirical studies where necessary components and interconnections were identified and positioned within the model. As stated earlier the design task was approached from a socio-technical perspective. The target domain should be perceived as an organizational work system encompassing social, technical, and organizational components.

By answering the research sub question in the theoretical study several components and interconnections were identified:

- Business Entity (client-organization)
- SaaS vendor
- External/Internal Stakeholders
- Decision Making Process
- Digital Presence
By answering the research sub question in the empirical study several components and interconnections were identified:

- SaaS vendor & Client-organization Information Interchange
- SaaS vendor Input-Output Processes (IPOs)
- External/Internal Stakeholders
- Decision Making Process
- Digital Presence
- Model Specifications

It is also worth mentioning that although the same sub-question was answered in both studies and that many of the answers appear at first glance to be exact correlations in reality they address the same answers from complementary but connected perspectives. The sub question involves both components and interconnections. The theoretical study helped to identify many of the components, while the empirical study helped to identify the interconnections within and between the components. The following results show combined contributions of both studies and are now represented in the proposed conceptual model.

**Business Entity**
The client-organization is a necessary component since it is the business entity that performs the marketing activity. Yet the interconnections of this component establishes what other components interchange information with it and in which direction does it flow. This component also acts as the organizational sub system with the authority to dictate regulative, normative, and cognitive rule/institutions.

**SaaS Vendor**
The SaaS vendor is also a necessary component since it is the service provider that facilitates technical support in the form of information systems. Yet the interconnections of this component consist of a two input-output processes and a closed feedback loop its client-organization. This component also represents the technical sub system that encompasses business process technologies, methods of managing artifacts, and problem-solving components.

**External/Internal Stakeholders**
The external/internal stakeholders are also a necessary component since it acts as a recipient of the marketing process and a source of revenue for the client-organization. The interconnections of this component consist of engagement with the marketing activities and two-way communication negotiations with the client-organization. This component represents a part of the social sub system with two types of stakeholders e.g. customers are categorized as internal stakeholders (since they engage in economic transactions with the client-organization) while visitors are categorized as external stakeholders (those that do not engage in economic transactions but are capable of impacting the client-organization). Internal stakeholders (customers) also serve as influencers to other customers and external stakeholders (visitors).
Decision Making Process
The decision making process is also a necessary component since it receives the direct input of digital intelligence from SaaS vendors and organizational customers. It is critical element for problem resolution and strategic planning. The interconnections of this component allow for the possibility of iterative steps to be taken in an effort to reach a well-informed decision. This component represents a part of the social sub system made up of organizational members categorized as internal stakeholders responsible for work related task.

Digital Presence
The digital presence is also a necessary component since it acts as the vehicle through which a client-organization implements its marketing strategy, collects insightful customer data, and facilitates business transactions. The interconnections of this component sustain closed feedback loops with the SaaS vendor, external/internal stakeholders, and client-organization. This component represents a part of the technical sub system where it can be perceived as a technical environment in which business processes are performed.

Model Specifications
The model specifications are yet another necessary component since they convey information about the interconnections, business processes, and functions that exist within the target domain.

5.2 Results Analysis
The empirical study allowed me to test the consistency of identified concepts that exist within the phenomena of digital marketing and SaaS BI. Through the research case I investigated the MeltWater Group a SaaS vendor that operates internationally. Since this investigation process was a solo endeavor I needed to rely upon domain experts to help me expand my knowledge of the research domain. Through my contact with MeltWater I gained access to my three research participants that also served as a subset of the participants who were administered a questionnaire. My interview participants consisted of a sales manager, business developer, and marketing analyst whom were each significantly important throughout the build and evaluate process of the digital marketing & SaaS BI conceptual model. As a result of interviewing the (first and second) participants I was able to advance the conceptual model from a single information flow line (interconnecting the SaaS vendor to a client-organization and its digital presence) to multiple information flow lines that communicated the interoperability of the domain design. The creative process that transpired allowed me to understand from a practitioner’s point of view reasons as to why businesses subscribe to SaaS, preferred information delivery methods, customization needs, SaaS challenges, and the adoption of SaaS BI tools.
The above transition communicates an increased understanding of how SaaS vendors interact with a client-organization's digital presence, the interactivity between the SaaS vendor and the client-organization, the interactivity between a client-organization and its digital presence, and customer engagement within the marketing process.

The interview with the third participant allowed me to increase my understanding of digital marketing, digital marketing tools, creating a digital presence, marketing intelligence, information delivery, marketing decision making process, marketing challenges, and marketing strategy. The third interview participant gave me positive confirmation on my choice of depicting the digital presence and digital intelligence concepts yet through our discussion about information delivery and the decision making process I became aware of a few defects.

Pull and push information delivery options mean that a client can either view their results through a user interface or have them delivered through email. Since I intended to represent the digital intelligence as an output I also needed to make it explicit that it is an internal process, which results in a system update. This was corrected by illustrating that the digital intelligence (in theory) is routed back to the SaaS vendor, allowing for a system update, before reaching the client-organization.

The decision-making process represents one of the most important functions of my proposed conceptual model and its presence must relate to the social system dynamics that are involved and the iterative process it represents. Revisiting the BI support system in the theoretical study I was inspired to depict the decision making process as activities of social agency internal of the client-organization. Prior modeling experience dictates that in order for a conceptual model of this complexity to have value it must be assisted by some form of specifications. Modeling specifications are rather specific when representing informational workflows but are more ambiguous when it comes to representing social behavior.

Motivated by the need to explain my cognitive depiction of the target domain while maintaining conceptual integrity I choose to enumerate areas within the conceptual model to specify informational and social behavior associated with specific processes.
Understanding that a business organization communicates with its customers separate from yet inclusive of marketing activates I positioned the outbound informational flow to interject at the intelligence phase of the decision making process. Noticeable in the side-by-side comparison of the two models the client-organization was shifted to a more central position since it interacts with every aspect of the designed domain.

Figure 17: Build & Evaluate (Phase 2 - 3)

Domain driven design is an iterative process that is reliant upon the researcher interacting with the domain environment. Due to the multiple elements involved in the proposed conceptual model and time restraints I chose to evaluate my artifact by designing a questionnaire. The questionnaire consisted of (13) 5-point Likert scale questions pertaining to the conceptual models realistic representation of the digital marketing/SaaS BI process and its perceived utility. The questionnaire was sent to (12) select respondents, with knowledge of digital marketing, SaaS, or both, to which only four questionnaires were returned. Through the use of the Likert scale questions I was able to collect ordinal data by assigning designated code numbers to the range of responses. Likert scale questions are suitable for ranking different levels of satisfaction but are not well suited for determining the level of satisfaction from one respondent to the next. However for the intended purpose of determining descriptive statistics e.g. median, mode, range, and inter-quartile range Likert scale questions are suitable.
5.2 Questionnaire Results

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<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Realistic representation of interaction between client-org. and digital presence</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Realistic representation of SaaS vendor and client-org.’s digital presence IOP.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Correctness of client-org./customer interaction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Correctness of customer engagement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Correctness of marketing decision-making process</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Realistic representation of client-org.’s marketing IOP.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usefulness</th>
<th>Very useless</th>
<th>Useless</th>
<th>No difference</th>
<th>Useful</th>
<th>Very useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usefulness of decision-making process</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Usefulness of SaaS vendor &amp; client-organization interactions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Usefulness of SaaS vendor’s input-output processes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Usefulness of organization’s digital presence interactions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1: Five-Point Likert Scale Questionnaire

Table 1 gives an overview of the 5-point Likert scale questions presented in the questionnaire. The questionnaire responses were returned to me by email where I downloaded, labeled, and saved the responses to a dedicated file. (A copy of the questionnaire appears in the appendix of this thesis).
Table 2: Participants Responses

Table 2 contains the raw data of participant responses. The participants were assigned ID numbers that range from 1 - 4 and their responses to questions 1 – 13 are listed. I manually loaded the data responses into a Microsoft Excel spreadsheet where I then applied a few statistical computations to gather a numerical description of the data.

<table>
<thead>
<tr>
<th>Participant ID</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
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</tbody>
</table>

Table 3: Central Tendency & Variability

In Table 3 the measurements of central tendency serves the purpose of allowing a research audience to distinguish what is a representative response for the respondent group, and the measurements of variability communicates the variation in the given responses. The central tendency and variance are natural parameters for distribution and can be used to describe the relationships that exist between variables (Chambliss & Schutt 2012). The above table consists of four measurements: median, mode, range, and inter-quartile range. The median measures the midpoint in a set of values and is useful for dividing a response group into an upper and lower level. The mode is the most frequently occurring value. The range contrasts the highest and the lowest value to identify the spread of a dataset. The inter-quartile range measure variability by splitting the dataset into quartiles and measures the difference between the end of the first and the beginning of the third quartiles (ibid).
Table 4 presents the respondent’s responses as aggregated percentages. This table is intended to show the relative frequencies of the responses in an easily understandable manner. A percentage measurement is achieved by cross multiplying the specific cases (Part) by (100) and then dividing the product by the total number of cases. Ex:

\[
\frac{Part}{Whole} = \frac{\%}{100}
\]

### Correctness & Usefulness

![Chart 1: Overall Percentage of Responses]

Table 4 presents the respondent’s responses as aggregated percentages. This table is intended to show the relative frequencies of the responses in an easily understandable manner. A percentage measurement is achieved by cross multiplying the specific cases (Part) by (100) and then dividing the product by the total number of cases. Ex:

\[
\frac{Part}{Whole} = \frac{\%}{100}
\]

Chart 1 shows the aggregated responses of the percentages presented in (Table 4) grouped as either agree or agree strongly. Since all the questions reference a single topic I grouped them together to show an overall perspective of how the questionnaire respondents perceived the correctness and usefulness of the digital marketing & SaaS
BI model. The high frequency of (agree and agree strongly) responses could be interpreted in several ways. Since a subset of the questionnaire participants were also interview participants that contributed to the conceptual model’s design these responses could infer that the model is representative of their interpretation of the topic domain. Without any degree of certainty I can only speculate that had my questionnaire sample population been larger or composed of individuals of different organizational positions the responses I received may have been more varied. It should also be mentioned that the very low amount of responses (4) that I received from the administered questionnaire discredits me from making any scientific claims based on the data presented in the above tables and graph.
5.3 Summary

In addition to the responses to the 10 Likert scale responses I received a couple of suggestions for improvement. One suggestion asked about depicting alternative services offered by SaaS vendors such as consultancy services and educational webinars. The second suggestion surrounded the possibility of the customers/visitors giving input at an earlier phase of the decision making process. After careful evaluation of the empirical evidence it became visible that consultancy services and webinars information can be interchanged as other forms of messaging along the alternative information flow route between the Saas vendor and client-organization. From this suggestion I made an adjustment to the model by adding an additional information flow route from the customers/visitors to the intelligence phase of the decision making process. The model now contains seven areas labeled numerically for model specifications.

Figure 18: (Revised) Digital Marketing & SaaS BI Model

The conceptual model captures a closed information loop between the SaaS vendor – client organization – internal/external stakeholders - and the digital presence. The system domain processes are illuminated as seven sub-closed loops that depict the existing relationships between domain components. The integration of digital marketing and SaaS BI produces a dual input/output process (IOP) external/internal of the SaaS vendor and an IOP internal of the client-organization. In the following
section I have isolated the (3) system domain IOP’s so that there function is explicitly expressed. Subsequent to the IOPs I have mapped out the seven domain system processes.

**SaaS External Input – Output Process**

![Diagram of SaaS External IOP]

**Figure 19: SaaS External IOP**

**SaaS Internal Input – Output Process**

![Diagram of SaaS Internal IOP]

**Figure 20: SaaS Internal IOP**

[80]
The external process is initiated when the SaaS vendor deploys software on behalf of a client-organization. The software can be intended to meet one of several organizational needs and applied to the identified digital marketing activities within the client-organization’s digital presence. Data generated through the interaction of activities gets extracted and loaded into an information system. The internal process transforms the marketing data and updates the client-organization’s system.

**Client-Organization Input – Output Process**

This process receives input from the digital intelligence extracted and transformed by SaaS vendors. This intelligence is injected into the marketing decision making process and is propagated through the decision making phases of intelligence, design, choice, and implementation. Once a marketing decision is made implementation is initiated and the adjustment strategy is output to a digital marketing activity.
System Domain Processes

1. Represents a closed information loop between SaaS vendors and a client-organizations digital presence, also SaaS vendor external IOP.

2. Represents (1) IOP within the SaaS vendor organization where collected data is modeled and loaded into an online system.
The information flow here represents an alternate information route for messages sent to the client-organization that do not involve the identified models of digital intelligence.

4. Represents a closed information loop that exist between a client-organization and its decision making process, (client-organization internal IOP).
5. Represents a closed information loop between a client-organization and its digital presence that supports the adjustment of marketing activities.

6. Represents a closed information loop between an organization and its customers/visitors. The alternative information flow depicts customer feedback that is input directly into the marketing decision-making process.
7. Represents a closed information loop between an organization’s digital presence and its customers/visitors. This represents the interactivity that external stakeholders have with digital marketing activities.
6 DISCUSSION

6.1 Conclusion

Digital marketing and SaaS are two phenomena that have gained increased visibility over the past few years. Despite the fact that these two phenomena are increasingly appraised under the same lens it is rare that they are critically examined in conjunction. The core function of organizational marketing dictates how an organization establishes and maintains relationships with its customers. As a result of globalization, digitalization, and ICT a substantial amount of customer interactions are conducted through digital mediums beyond organizational firewalls.

Organizations have a long history of finding ways to alleviate the allocation of resources needed to develop and maintain organizational information systems. Since many organizational functions are crucially needed to sustain a business a viable alternative is to contract third parties to perform specific business processes externally. This specific type of business service is known as outsourcing and has allowed many organizations to reduce operational cost while remaining competitive.

The advent of digitalization meant that sensitive data once kept in hard files now reside in information systems, systems that if allowed to be outsourced could place many organizations at considerable risk. SaaS is a more current form of outsourcing that allows an organization to subscribe to a cloud based delivery model. A variety of business processes are available through SaaS e.g. BI, ERP, CRM, accounting, content management, etc. These services generate an abundance of data that once transformed becomes the actionable information necessary to make better informed decisions.

In the 21st century most business environments exist on the Internet. This not only means that goods and services are brought and sold incessantly online, but that customer relationships are established and maintained there as well. The wares provided by SaaS vendors place them in a unique position as information purveyors. Many business areas could benefit from such information, but one business area in particular substantially benefits above all others, marketing.

The current digital revolution has aided in the empowerment of customers through innovative technology and communication structures that allow them to make better-informed decisions. The marketing orientation has shifted from that of product-driven to customer-driven, which means that customers, not marketers, decide when and where they will receive marketing messages. According to the Internet World Stats Internet usage worldwide has increased over 500% since 2000. People use the Internet for a myriad of reasons making it critically important that marketers embrace digitalization for the purpose of engaging customers in their desired space.
Digital marketing has grown more prevalent over the past 10 years yet it still presents several challenges for organizations and marketers alike, as it has often been compared to ‘hitting a moving target.’ Generating and employing relevant customer insight within the digital marketing process still remains one of the most common challenges for digital marketers. Several marketing theorist have suggested that the field of marketing could benefit from conceptual models that increase the effectiveness of digital marketing. In this thesis I have addressed the phenomena of digital marketing and SaaS by endeavoring to answer the question, ‘How can marketers integrate SaaS-based intelligence into the digital marketing process?’

Through this thesis process I constructed an artifact that illustrates the dynamic relationship between SaaS vendors and client-organizations. This model depicts an overview of information interchange within seven closed information loops. The identified closed information loops represent business processes necessary for gathering and transforming data, information delivery, marketing decision-making, strategy implementation, and relationship building/maintenance.

From a socio-technical perspective I investigated the interconnected subject areas of business intelligence, BI support systems, SaaS BI, digital marketing, and diffusion of innovation. The investigation of these relevant areas allowed me to fabricate a cognitive image of the business landscape where digital marketers ply their trade. BI has essentially been developed and maintained to supply actionable information to the organizational decision making process. The downside to the traditional BI environment is that it requires substantial funding and time to develop with limited flexibility. The emergence of the SaaS business model has given organizations an alternative to in-house development and maintenance of necessary information systems e.g. ERP, CRM, MIS, content management, BI, etc. SaaS BI is set for mainstream adoption in about 2 – 5 yrs., which means that its presence in organizational IT portfolios will become more commonplace.

For many businesses the decision to adapt SaaS BI hinges on a matter of data security and, for the time being, must remain outside of organizational firewalls. Yet this is not the case for the function of marketing. Since digital marketing, to a large degree, receives input from the interactivities of information systems deployed and maintained on the Internet. Data generated as a result of an organization’s digital presence can be harnessed to produce actionable information that support marketing strategies, developing products/services, educating sales teams, and engaging customers. Mapping out and identifying the components of an organizations’ digital presence allowed me to construct a digital marketing mix. A SaaS vendor and its client-organization interact with digital marketing mix activities to produce digital intelligence.

By identifying various types of intelligence and analytical data I was able to compose a model of digital intelligence that bridges the gap between web and business
analytics. Digital intelligence is the output of all forms of business intelligence and big data that derive from human interaction with information systems. The decision making process, depicted in the model, transpires internal of the organization and receives the input of digital intelligence. Here the process emulates that of the decision-making phases (3.7) of intelligence, design, choice, and implementation, which is implicitly the action taken by the client organization. Congruent with the established decision process the model depicts iteration, which can return to any given prior phase until the process objectives have been satisfied. From this position a digital marketing strategy can be implemented and activities within the marketing mix can be adjusted accordingly.

The practical contributions of this thesis work strives toward creating a better understanding of how digital marketing can be augmented by SaaS BI. This issue is of importance since disruptive innovations have altered the way individuals communicate and how organizations engage their customers. The advantages of the conceptual model is that it provides a high-level overview of the target domain and allows marketers or business minded individuals a better understanding of the digital marketing process and the options afforded by SaaS BI. The digital marketing and SaaS BI model illuminates the SaaS vendor-client-organization dyad, the marketing decision-making process, components of a digital presence, elements of an information value chain, and customer engagement. The expected research outcome of designing a conceptual model that illuminates the relationships that exist between digital marketing and SaaS BI has been fulfilled however the task of successfully measuring the proposed models utility has yet to be accomplished due to lack of a test environment and time constraints.

6.2 Implications Marketing & SaaS

The research phenomena investigated within this thesis pertains to digital marketing, cloud computing (SaaS), and business intelligence that are all relevant areas of study within informatics. Informatics is a broad field of study that is concerned with the design, application, usage, and impact of information systems, which is accomplished by striking a balance between its theoretical and practical uses. An informatics approach to design originates from a multidisciplinary perspective that incorporates computer science, information science, organizational science, cognitive science, behavioral science, and social science. As it stands information technology defines our relationships, organizations, and existence. Information systems that are intended to facilitate the human work task must be compatible with the environmental and business context in which they are employed. If human computer interaction is the manner in which we shall proceed into the future, we as informatics majors are obligated to design high quality systems that are socially and technologically cohesive.
**Digital Marketing**

Digital marketing is a phenomenon subsumed under informatics. It attends to the organizational function of marketing, which is traditionally categorized within organizational studies. But with the emergence of technological innovations like digital computing, communication technology, and the Internet have altered cultural, behavioral, and communicational patterns (Constantinides & Fountain 2007). In accordance with most other things marketing has also become highly digital placing it directly within the field of informatics. Digital marketing employs an abundance of information systems and ICT in the process of achieving marketing objective (Wind & Mahajan 2002). Contrary to traditional push marketing strategies innovative ICT enable users in a digital environment to pull relevant content thus fabricating distinct information sets (ibid).

**Cloud Computing (SaaS)**

Cloud computing is another phenomenon subsumed by informatics. It attends to a software delivery model that gives clients an alternative to the ownership of on-premise information systems. In recent years, SaaS has become much more mainstream with a broader range of offering. The services offered through SaaS and the role they assume within business functions are of high priority to the field of informatics. These tools are designed, deployed, and hosted to manage business processes e.g. ERP, CRM, content management, human resource management, financial, etc. With the diffusion rate projected to increase throughout the next decade (Armbrust et al. 2010) the methodologies in which SaaS applications are developed under must account for the digital economy that we conduct business in and the stakeholders that utilize them.

**Business Intelligence**

Business intelligence is yet another phenomenon subsumed by informatics. It is a two-fold subject that in one context pertains to an environment of processes, tools, and technologies designed for the purposes of information architecture, data warehousing, and information delivery (Negash 2004). In the other context it is an informational product that results from the BI process and allows its users to make better-informed decisions at different organizational levels (Chung et al. 2005). This subject area is of great interest to informatics since it infuses ICT with business systems and process integration. The ability to apply BI tools to online business processes and deliver analyzed data over distributed networks is perhaps one of the most innovative means of navigating the information overload of today in an effort to remain competitive (Negash 2004).

### 6.3 Method Evaluation

**Theoretical Study**

The theoretical study was used to explore relevant subject areas within the phenomena of digital marketing and SaaS. The identified subject areas were
employed to address the research problem and to help formulate components that appear in the designed conceptual model. The literature sampling of this study stemmed from peer-reviewed articles found in scientific and academic journals, course textbooks, research publications, and relevant Internet sources. These samplings were valuable elements in the construction of a theoretical framework that both supports and informs my research. The literature, per say, did not serve as an authority but as a fallible source of theories that allowed me to arrive at a personal understanding of the phenomena under investigation and construct an original contribution. My efforts here were rendered in the form of text, tables, and models that represent a tentative theory of the phenomena.

**Empirical Study**

A case study is a good research strategy for investigating an organization. The organization that my case study focused on was the MeltWater Group, a SaaS vendor. By obtaining access to the MeltWater Group I was subsequently able to collect data relevant to the research phenomena of digital marketing and SaaS BI. A Semi-structured interview is a good data generation technique that allows a researcher to gain detailed information about issues relevant to a research problem. In addition to semi-structured interviews I gained insight from organizational documents developed for application characteristics and client testimonials. I arranged and conducted three interviews with MeltWater employees, a fourth interview was planned but due to time constraints and cancellations I was unable to fulfill it. The first research participant interviewed was an account manager who was very knowledgeable about the services provided by the organization (SaaS vendor) and the client-organization interactions. As a result of the first interview I engaged in the first build and evaluate phase of the design artifact process. Here I established a criterion set based on the quality attributes of interoperability and conceptual integrity. From the components identified in the theoretical study I began the construction of my design artifact by positioning the domain components in a closed information loop. The evaluation of phase-1 supported the information interchange structure that I established.

The second research participant interviewed was a business developer who was able paint me a descriptive image of the work task she performs. Through the second research participant I was able gain a better understanding of information delivery needs and data integration. Subsequent to conducting the second interview I entered into build and evaluate phase-two where I continued to improve upon the established design. Here I built into my design artifact close information loops between SaaS vendors, client-organization, digital presence, and external stakeholders. In addition to the closed information loops a communication bypass was included to account for multiple message types exchanged between SaaS vendor and client-organization. I evaluated the updated model on the established criterion set and gave justifications for the choices made.
The third research participant interviewed was a senior insight analyst who was able to inform about multiple marketing concepts encountered within her work task. Here insight was gained about different types of SaaS tools employed in marketing campaigns, the marketing decision-making process, preferred information delivery, and marketing strategy appropriateness. After the third and last interview I entered into build and evaluate phase-three where I again continued to improve upon the established design. Here I inserted a decision-making process into the model based on the concept identified in the theoretical study and the third research participant’s account of the process. This process I chose to depict as an internal social system and aligned it with the external social system. In addition, for the purpose of clarity I labeled the closed information loops and the communication bypass and gave model specifications for each. The evaluation again was based on the criterion set and an argument was presented in defense of the choices made.

6.4 Results Evaluation

The strategy for evaluating the result of this thesis is not as easily identifiable as that of natural or social sciences evaluation criteria. Since design science research is more focused on the design and utility of an artifact, formalized principles of evaluation criteria are somewhat varied. The lack of specific evaluation criteria may arise form the fact that design science research is performed through an iterative process of ‘build and evaluate’ that endeavors for rigor and relevance throughout and the fact that no two artifacts are designed and utilized equally. The purpose of evaluating here is to validate the digital marketing & SaaS BI model by assuring that the concepts identified contains all the characteristics as described and satisfies its intended purpose.

Plausible – the purpose of evaluating this quality attribute is to examine whether the designed artifact is reasonable within the framework of the existing domain knowledge. In order to address plausibility I will answer three questions: (1) is the design artifact reasonable for its intended use? (2) is the design artifact credible beyond conjecture? (3) does the design artifact fit within the field of the problem domain?

(1) Is the design artifact reasonable for its intended use?

The designed artifact is intended as a model that represents the interactions between SaaS vendors and client-organizations in the context of digital marketing. A model, in its basic form, is anything that is used to symbolize anything else. A conceptual model, however, is a model that depicts a certain environment and may consist of multiple entities, their attributes and interconnectedness, and governing rules. The design artifact of this thesis is a conceptual model representative of a complex business domain in which I have approached from a socio-technical perspective.
(2) Is the designed artifact credible beyond conjecture?

A design artifact is the output of design science research, which is employed to bridge the gap between theory and practice through the design of innovative artifacts that address real-world problems. Design science research is a well-documented methodology that has a long-standing history in many disciplines e.g. engineering, architecture, psychology, education, information systems, etc. The problem domain is positioned within the domain of the Internet and comprises an array of information systems, business processes, and human agency. The information systems discipline is comprised of a complementary research cycle between design science (produces IS artifacts) and behavioral science (produces IS theory). Design science authorities have established a range of research guidelines to ensure the relevance and rigor of design science research process and that the resulting artifacts are credible utilities.

(3) Does the design artifact fit within the field of the problem domain?

The positioning of the design artifact within the phenomena of digital marketing & SaaS BI is visible through the concepts investigate within the thesis. Diligent effort is demonstrated by establishing a target domain to design a digital marketing & SaaS BI artifact that shares characteristics of artifacts already existing. The research investigation has allowed me to expand upon my prior knowledge of cloud computing, business intelligence, and marketing which are all concepts subsumed within informatics. The study or organizations and their processes have been investigated at great lengths through case studies. As a result of me gaining access to a SaaS vendor to use as a research case I was able to confirm the relevance of identified subject areas that appear throughout the theoretical and empirical studies both in textual and graphical representation.

Effective - the purpose of evaluating this quality attribute is to examine whether the designed artifact completely represents the phenomena under investigation. The problem domain statement addressed in this thesis is, ‘How can marketers integrate SaaS-based intelligence into the digital marketing process?’ I embarked upon a case study to answer this question since there was a need to understand the dynamics of the components involved in a realistic setting. Seeking a holistic understanding of the phenomena I decided to represent the target domain through a domain driven design where I modeled various concepts as they were described in existing literature and within the research case. The conceptual model designed in this thesis is parsimonious since it does not over-fit the target domain yet can be easily conceived from any pattern of observation. The target domain contains several relevant concepts that possess complexities however the elements can be easily repositioned to match any particular set of facts. Flexibility was shown throughout the building phases, once the target domain components where defined I was able to adjust them as more knowledge was gained.

Feasible - the purpose of evaluating this quality attribute is to examine the design artifact on the basis of being workable. The thesis target domain exists online with at
least one component existing internal of the client-organization. Since this artifact is intended as a conceptual model for digital marketers and business minded individuals who employ, or have a desire to employ, SaaS BI in marketing campaign the economic obligation of implementation is the most obvious barrier. Other constraints for such an endeavor come in the form of an agreed upon service license agreement (SLA) between the SaaS vendor and client-organization and organizational policies pertaining to outsourcing, change management, marketing, culture, and data security. Outside of the given constraints adherence of the design principles is pretty straightforward as described in the specifications, however since most of the constraints that could interfere with adoption pertain to human behavioral factors adoption could be relatively easy or complex.

**Predictive** - the purpose of evaluating this quality attribute is to examine the predictive precision of the design artifact. Predictive precision is validated when a design artifact is demonstrated to be useful. The predictive criterion is also associated with internal validity, which can be established by showing consistency between the research components. A review of the research design reveals a congruent structure between the statement of problem, purpose of study, research strategy, data collection method, data analysis procedures, and result validation methods.

The statement of problem draws attention to the existing gap between existing research and the real world. The purpose of study places the thesis in an exploratory context where I strived to identify common ground between targeted phenomena. The type of research question (*how* and *why* question) is consistent with exploratory studies. A case study has been established as an appropriate strategy for conducting exploratory investigations that center on the intricacies of relationships and processes and their interconnectedness. The particular case applied here is a short-term contemporary study, which happens to be based as a critical case and one of convenience. Data collection methods gathered both qualitative and quantitative data. The qualitative data was a triangulation of semi-structured interviews with documents while the quantitative data was gathered through a questionnaire. The qualitative data was analyzed in both the theoretical an empirical studies and employed to answer the research sub-question while the quantitative data was analyzed statistically through central tendency measurements. The results validation methods are based on alternative methods proposed by a group of design science researchers that evaluated design patterns. Since a conceptual model is a similar artifact type it was therefore appropriate to evaluate the results based this criteria.

The conceptual model exists in a social, technical, and organizational context, which may prove more difficult to evaluate. The manner in which I applied the designed artifact to a real life setting was by designing a questionnaire that collected the opinions of digital marketing and SaaS professionals. The questionnaire presented the design artifact along with a description of its intended purpose, and then I presented the model seven times the closed information loops were highlighted with a brief
description of its components. Subsequently I designed and administered a questionnaire that consisted of (13) Likert scale questions (nine questions pertaining to correctness and four questions pertaining to usefulness) intended to gather an overall opinion about the correctness and the usefulness of the designed artifact. However, the sample size that I administered the questionnaire to and the number of responses that I received discredit me from attaching any scientific claim to the data from the statistical measurements that were calculated.

Reliable - the purpose of evaluating this quality attribute is to determine how much we can rely upon the presented data. During the course of a research thesis it is inevitable that we will encounter phenomena that are constantly being modified and revised. However the duration a researcher spends engaging in the intricacies of a particular phenomenon through reviewing literature and gathering empirical data fortifies the researcher’s capacity to apply pertinent methodologies for investigating such phenomena. In section (1.9) I have designed a model of the thesis structure that maps the steps taken throughout this thesis for the purpose of clearly interpreting the interaction of research components and the replication of the thesis process. A research endeavor that is distinctly area specific but lacks replication has an insubstantial impact outside the environment of the investigation. The research design of this thesis consists of a research strategy (case study), data collection procedures (interviews, documents, and a questionnaire), and qualitative and quantitative data analysis (comparative analysis and descriptive statistics).

The research case in this thesis investigated the MeltWater Group, a SaaS vendor with over 800 employees and 55 offices located in Europe, North and South America, Asia, Africa, and Australia. My contact at MeltWater was mediated through five individuals a marketing communications manager (Stockholm), communications manager (Denmark), and account manager (interview participant 1), business developer (interview participant 2), and senior insight analysis (interview participant 3). Advancing from the theoretical study I entered the develop/build stage, designed a conceptual model of the target domain based on concepts explored in the knowledge base and preceded into my chosen research case. The first research participant was interviewed and the interactions of certain components within the design artifact were justified/evaluated. As a result of me interacting with the SaaS vendor my knowledge of the problem domain was improved based on the validation criteria of interoperability and conceptual integrity. Invigorated with the newly discovered knowledge I returned to the develop/build stage and redefined the design artifact.

Subsequently the second research participant was interviewed and I investigated relationships within the identified components of the conceptual model. Three interactions are critically relevance at this point: SaaS vendors and the client-organization, SaaS vendors and the client-organization’s digital presence, and the client-organization and its external stakeholders. Through the interaction with the research case I was able to acquire insight as to how client-organizations receive
intelligence from the software service and how they as a SaaS vendor interact with client-organizations digital marketing campaigns. Again as a result of me interacting with the SaaS vendor my knowledge of the target domain was updated. And I returned to the develop/build stage and again updated the designed artifact.

Finally the third research participant was interviewed and here I investigated the digital marketing mix activates and the marketing decision-making process. From the expertise and of the third participant I was able to confirm concepts identified in the theoretical study and gained insight on how social agency is appointed to the decision process. The results of the empirical study were then used to answer the research sub questions. All three interviews were conducted via Skype and captured on a hand held recording device. Afterwards the interviews were transcribed using ExpressScribe and stored in a backup file. I then submitted the transcribed interviews to the research participants to be validated for correctness. The organizational documents used were (client testimonies) generated for promotional purposes under a different but related context from which I have approached this research. Being conscious of this fact I preceded to examine the documents for relevant themes with suitable skepticism. Lastly I designed a questionnaire as a method of gaining a better understanding of the conceptual models correctness and usefulness. As mentioned earlier the very low amount of responses (4) that I received from the administered questionnaire discredits me from making any scientific claims based on the data presented in the above tables and graph. Twelve questionnaires were administered to which four participants responded by completing and returning the questionnaires. If I were to measure the response rate it would weigh in at approximately 33%, this would be an acceptable response rate to make reliable scientific claim. However the problem is that the sample I chose to administer the questionnaire to was too small. Considering the difficulties with finding an adequate number of participants to administer the questionnaire to it might have been more appropriate to explore the correctness and usability of the model through additional interviews instead of a questionnaire.

6.5 Possibilities to Generalize

A generalization of a research thesis conveys that what is the case and time in one context can be applicable to another case and time. Researches using a case study strategy of are perceived, as being weak candidates for external generalizations yet an attempt must be made to render the research results applicable in other contexts. The research phenomena of digital marketing & SaaS BI involves a software delivery model (SaaS) that is swiftly gaining prominence as IT systems and software alternatives for many businesses. Within the current business environment it is a rarity that a business entity does not utilize some form of computerized information system. The types of software and hardware services offered by vendors grow in stature as more innovative ways of employing business systems are created. Marketing is, more than an organizational function, a core responsibility of management performed in all businesses to an extent. Digital marketing activities encompasses a myriad of
information systems and ICT, many were not explicitly discussed in this thesis yet implicitly they are represented within the target domain. Since marketing is universally practiced in all businesses and the common denominator that associates it to other research contexts all endeavors made to increase its effectiveness are invaluable.

6.6 Ideas for Continued Research

The phenomena of digital marketing & SaaS BI appear with regularity in the practical world but have not been very visible in academic studies. Conceivably with time this trend will change as academic researchers from various disciplines e.g. organizational studies, informational science and relational science begin to develop theories related the this phenomena. From the concepts I have investigated here it is inferable that SaaS, and more specifically SaaS BI, usage will grow more profound in the coming years and that marketing practices will persist with the interactivity we have grown to anticipate. From this perspective I can envision continued research of the proposed conceptual model where it is employed within a real-world setting. I propose that the designed model undergo at least three separate test evaluations by domain experts whom can attest to its utility and offer suggestions for refinements. By observing the conceptual model in action various programmed decisions can also be pinpointed. The marketing decision process could be expedited if supported by artifacts capable of automating suitable programmed decisions.

6.7 Speculations for the future

A future trend as discussed between the third research participant and me is that SaaS applications have reached a very high level of functionality and service but that they are under employed behind company firewalls because of either organizational or governmental regulations pertaining to information security. If a universal security standard were to be developed and implemented that SaaS vendors cohered to SaaS usage would easily exceed any future predictions since SaaS would attract a wider customer base by serving organizations externally and internally.
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Perceptions of Adopting an Information Technology Innovation. *Information 


The purpose of this questionnaire is to elicit responses that will enable me to improve upon the design principles that I have designed for my master’s thesis. Any comments, advice, or questions (no matter how small) that you render will be constructive and allow me to advance towards a design that depicts interoperability, conceptual integrity, and utility.

This model is illustrative of iterative interactions that transpire between the marketing function of a client-organization and SaaS vendors. This model illustrates the digital marketing activities that allow an organization to form a digital presence, how the information extracted from these various activities are made actionable, how customers and system users (visitors) interact with an organization and its digital presence, and how the digital intelligence collective is input into the decision-making process.

Throughout the digital marketing process a business entity, along with the assistance of SaaS vendors, engages its customers through various digital marketing and relationship building activities. Customer engagement produces collected data, which is then transformed into intelligence that allows a business to measure the effectiveness of a particular marketing strategy. The information flows illustrated in this model track the propagation of this data as it is collected, transformed, and utilized. First I will present the model specifications so that the intended purpose of every process or information flow is clearly explained. Then subsequently present a questionnaire with (13) concerning the proposed model’s correctness and usefulness.
P.S. Let it be known that your responses to the following questions will be kept strictly confidential and limited to the context of this specific study. The completion of this questionnaire is voluntary and (if you so desire) can abandon this process at any point.

**Model Specifications**

The following illustrated models highlight (in red) various informational flows that take place within the digital Marketing & SaaS BI conceptual model. The first (1-7) illustrations depict isolated processes while illustrations (8-10) depict multiple integrated processes.

1) This information flow depicts the input-output process between the SaaS vendor and its client-organization’s digital presence. Where an information criterion is input to one or more marketing activities and extracted data is output.
2) This information flow forms an internal input-output process within the client organization, here data collected from the digital presence is modeled and stored in the SaaS vendor’s online system.

3) These information flow lines represent a by-pass where multiple message types can be communicated between the SaaS vendor and the client organization.

4) This information flow forms an internal input-output process within the client organization, red lines indicate the iterative flow of the decision making process.
5) This information flow forms a closed intelligence loop between the client organization and its digital presence.

6) This information flow forms a closed intelligence loop between the client organization and its customers/visitors, as well as an information flow to the decision making process.
7) This information flow forms a closed intelligence loop between digital marketing activities and customers/visitors.

8) These information flow lines represent a closed information loop between the SaaS vendor and the client organization.
9) These information flow lines represent a closed information loop between the SaaS vendor, client organization, and its digital presence.
10) These information flow lines represent a closed information loop between the SaaS vendor, client organization, customers/visitors, and the digital presence.
Digital Marketing & SaaS Questionnaire

1) Does the digital presence illustrated in the conceptual model give a general overview of how organizations market their product/service?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

2) Is model (8) a realistic representation of the interactions between a SaaS vendor and a client-organization?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

3) Is model (9) a realistic representation of the interactions between a SaaS vendor, client-organization, and its digital presence?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

4) Is model (5) a realistic representation of how an organization interacts with its digital presence?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

5) Does the two sequential input-output processes between the SaaS vendor and a client-organization’s digital presence give a realistic overview of how digital intelligence is generated?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

6) Is model (6) a realistic representation of how an organization interacts with its customers/visitors?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

7) Is model (7) a realistic representation of customer engagement with digital marketing activities?
   (1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

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8) Is model (4) a correct representation of an organization’s marketing decision-making process?
   1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

9) Does the interaction between the SaaS vendor and a client-organization’s digital presence give a realistic overview of the marketing input - output process?

(1) Strongly disagree (2) disagree (3) neutral (4) agree (5) strongly agree

10) How would you rate the usefulness of having the decision making process illustrated in the model?
    1) Very useless (2) useless (3) no difference (4) useful (5) very useful

11) How would you rate the usefulness of having the SaaS vendor and the client-organization interactions illustrated in the model?
    1) Very useless (2) useless (3) no difference (4) useful (5) very useful

12) How would you rate the usefulness of having the SaaS vendor’s input-output processes illustrated in the model?
    1) Very useless (2) useless (3) no difference (4) useful (5) very useful

13) How would you rate the usefulness of having the digital presence interactions illustrated in the model?
    1) Very useless (2) useless (3) no difference (4) useful (5) very useful
Do you have any suggestions for improving the correctness and usefulness of the proposed conceptual model?
University of Borås is a modern university in the city center. We give courses in business administration and informatics, library and information science, fashion and textiles, behavioral sciences and teacher education, engineering and health sciences.

In the School of Business and IT (HIT), we have focused on the students' future needs. Therefore we have created programs in which employability is a key word. Subject integration and contextualization are other important concepts. The department has a closeness, both between students and teachers as well as between industry and education.

Our courses in business administration give students the opportunity to learn more about different businesses and governments and how governance and organization of these activities take place. They may also learn about society development and organizations' adaptation to the outside world. They have the opportunity to improve their ability to analyze, develop and control activities, whether they want to engage in auditing, management or marketing.

Among our IT courses, there’s always something for those who want to design the future of IT-based communications, analyze the needs and demands on organizations' information to design their content structures, integrating IT and business development, developing their ability to analyze and design business processes or focus on programming and development of good use of IT in enterprises and organizations.

The research in the school is well recognized and oriented towards professionalism as well as design and development. The overall research profile is Business-IT-Services which combine knowledge and skills in informatics as well as in business administration. The research is profession-oriented, which is reflected in the research, in many cases conducted on action research-based grounds, with businesses and government organizations at local, national and international arenas. The research design and professional orientation is manifested also in InnovationLab, which is the department's and university's unit for research-supporting system development.