

# Evaluating the impact of the socio-technical digital intelligence factor on customer-business relationships

K. M. Moorning

Medgar Evers College

The City University of New York, USA

---

## Keywords:

Digital intelligence, social media, business analytics, exploratory factor analysis

## Abstract

*As nations crossed the millennium, a socio-technical ubiquity emerged. Much of society spent their entire lives surrounded by computers and new media tools of the digital age. Being connected became a way of life, a digital life, making way for an emergent, converging collaborative-participatory mode. With an ever-increasing role in popular culture, social media platforms are the premiere source for obtaining big data. Digital participation in these environments expands the quality of life, and forms a new strand of business intelligence attributable to explosive online social citizenry. Cultural habits and customs in the digital ecology spawned from our reliance on computers and technical devices generate new real-time consumer analytics for business productivity. Unlike physical participation where business relations are based on locale, business analysts can draw from global pools of consumer data beyond their organizational walls. Two critical reports produced by Forbes Insight and Forrester research frame thoughts about socio-technical digital intelligence. When actively engaging in virtual social spaces, analysts approach consumer responsiveness in a way that has a positive effect on products and services.*

---

## 1. Introduction

Rapid developments in social media infrastructures offer new possibilities for improving organizational productivity, but limitations in the range of research evaluating socio-technical consumer behavior prevent advancements. The dearth of data examining the social dimensions of business relations in online environments invites us to revisit the communications phenomena. Given the unprecedented scale in deployment of wireless devices in ubiquitous information environments, unique research opportunities exist for investigating the use of technology in business-consumer relations by society at large.

Generally referred to as the interaction of people and technologies, socio-technical behavior brings about new meanings of business intelligence. Since the beginning of the Internet, information moves rapidly across the world creating collaboratories of relationships across the world. The network of digital communication technologies inspires and demands new social arrangements, where social media innovations spark technological innovations. Computational awareness of the consequences and technical opportunities of emerging social practices informs business practices.

This research addresses digital data-driven customer experiences critical to the growth and development of organizations in today's hyper-competitive economy. Improving the customer experience enhances revenue generation and enables organizations to better target customers. (Forbes Insights, 2016). This radical change means people receive business information fundamentally differently from their predecessors. As participants in the digital world, corporations can use social platforms to expand their business agenda, by engaging in deep critical analysis of social-cultural data. Ubiquitous access to business content has only intensified the need for efficient methods of customer relations. Providing information about products and services are just basic steps in the drive toward digitally intelligent business performance.

## 2. Background

Predictive analysis forecasts buying habits and trends in many aspects through credit card purchases and loyalty card usage. When transactions are aggregated in a single area it becomes a fertile location for the business to capture data to predict how much a given customer will spend on a particular product or service. A buying index determines the customer's worth to a company. E-marketing analysis is another massive opportunity that technology affords, evident by the droves of news and advertisements sent to customers via e-mail and digital media. Analytics exemplify how business information is captured, processed, and communicated in today's highly connected world. Better social customer analytics help companies make decisions with confidence because every decision is based on facts and objective data.

Restricting digital tools and networks to simply a marketing channel limits the customer relationship to sales while missing broader opportunities within the competitive Web environment. These advantages require a shift toward full community participation because social interaction is a critical attribute of the customer population. Important skill clusters which use and produce customer-centered digital news in social networks are necessary for upward trends in customer satisfaction. Designing, inventing, authoring and sharing content with customers about the company's ethical responsibility is the core of digital intelligent business practices.

Digital customer engagement is a modern competitive approach of gathering data from social channels for making business decisions. Understanding customers as they make purchases is hard enough, and taking actions that optimize their experiences across multiple social media channels may be harder. Analysts need a strategic road map to navigate mounds of social activity data. Digital intelligence is the approach today's firms must adopt to continuously optimize digital customer experience. For businesses, it involves the use of technology to make meaning of the entity's ecology, and the impact it has on investment decisions. This digital citizenship requires a new form of communicating customers. Many firms are stymied by the breadth and depth of digital intelligence requirements but need to keep pace with changing customer expectations and digital behaviors (McCormick & Little, 2016).

### **3. Digital Analytic Business Practices**

Analysts have a wealth of data resources and technology at their disposal to measure digital customer interactions. Many businesses fail to adopt digital analytic practices that capture metrics about how their customers' experience online impact their relationship. Two major reports describe the success factors and ownership models that help business professionals build a digital intelligence organization to gain competitive advantage - Forrester's "The Digital Intelligence Playbook" and Forbes "New Ways of Discovering and Applying Customer Insights."

Forrester provides customer insight data about systems of engagement and systems of insight that drive digital intelligence capability. The playbook sets the groundwork for the strategy, technologies, and best practices infusing digital insight research. Forbes explored the depth at which organizations' must embrace digital analytics to enhance the customer experience. The Forbes report indicates that the greatest customer experiences are rich interchanges between customers and the organizations with which they choose to do business.

Forrester explains that customer relations "hold the balance of power" over brands. The myriad of ways customers digitally interact with businesses means they can move on to competitors when their expectations are unmet. Though spending for digital marketing continues to grow, these more holistic approaches bring challenges. In today's multifaceted digital landscape, traditional practices that typically focused on web analytics and aggregated customer views are ill-equipped to capitalize on intricate digital customer interactions. Complexities and opportunities in the modern digital world of customer interaction require an update of digital analytics practices.

It is equally important to understand the possibilities and consequences of customer analytics in ubiquitous information environments beyond the boundary of marketing. The ubiquity of socio-technical communication devices has contributed to the softening of barriers between home life and retail life establishing a trend in how to reach customers. It is in this area that a significant body of research can explore the impact of social media and specific digital interactions provide a valuable contribution in understanding the impact on organizational life.

To accommodate a growing catalog of and close the gap between traditional web analytics and comprehensive analytics for digital customer interactions, Forrester suggests digital intelligence to capture, management, and analyze customer data and insights to deliver a holistic view of digital interactions. The goal is to continuously optimize business decisions and customer experiences across the customer life cycle. Forrester suggests comprehensive analytics strategic that combines technologies, stakeholders and users, data integrations, and a focus on optimization and direct action. To close the gap between analysis, insights, and action, Forrester believes optimizing digital customer interactions based on a more complete view of customer relationships wherever interactions take place. Forbes also reports that old customer experience consisted of static, one-dimensional encounters can be transformed, thanks to rich interchanges between customers and the organizations with which they choose to do business. Figure 1 illustrates the growth of analytics from basic log information to adoption of customer views in multiple digital channels.

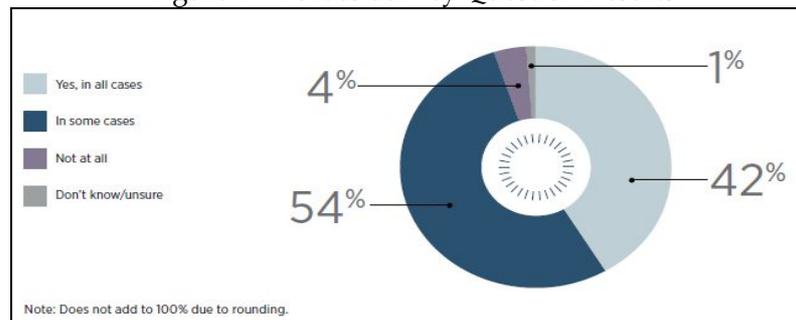
Figure 1 – The Timeline of Web Analytics

1993 to 1999	2000 to 2006	2007 to 2010	2011 to present
<b>Web server log analytics</b> <ul style="list-style-type: none"> <li>• The World Wide Web and the web browser emerge.</li> <li>• Firms understand the volume of activity on websites.</li> <li>• Website analysis is conducted, using data collected from web server logs.</li> <li>• The first commercial website analytics software is created.</li> </ul>	<b>Web analytics</b> <ul style="list-style-type: none"> <li>• Mainstream acceptance of interactive channels such as search, email, and websites.</li> <li>• Firms understand aggregate website visitor activity, content usage, and traffic sources.</li> <li>• JavaScript is accepted as the web analytics data collection mechanism of choice.</li> <li>• The second generation of web analytics applications cements the market; Google launches Google Analytics, a free web analytics application.</li> </ul>	<b>Digital analytics</b> <ul style="list-style-type: none"> <li>• Mainstream acceptance of social media channels.</li> <li>• Firms understand interactions across interactive channels and track the success of interactive marketing campaigns.</li> <li>• Data collection expands to incorporate social and interactive channels; vendors extend native data warehousing capabilities and partner integrations.</li> <li>• Enterprise technology vendors enter and consolidate the web analytics application market; site optimization application vendors proliferate.</li> </ul>	<b>Digital optimization</b> <ul style="list-style-type: none"> <li>• Mainstream adoption of mobile channels.</li> <li>• Firms start to consolidate views of a customer across multiple digital and offline channels and can take direct, timely action on insights.</li> <li>• Data collection and analytics expand to incorporate mobile, social, applications, media, and the Internet of Things (IoT). Tag management and data syndication become standard.</li> <li>• Specialist vendors enter the market to address emerging media, customer data management, and IoT analytics.</li> </ul>

Source: Forrester Insights, 2016

Forbes surveyed 357 executives of large organizations and found that evolving to data-driven customer experiences led to enhanced revenue generation, cost reduction, and accelerated process efficiencies. Organizations wanting to deliver consistency and context across various digital channels achieve this by alignment of all key players behind customer experiences, not only sales and marketing employees. The use of data analytics enables businesses to interact with customers in their preferred channels. Applying relevant behavioral data in customer-service operations improve the customer service experience. Pushing ethical data out to the consumer are also associated satisfaction and buying decisions. Figure 2 represents the results from the Forbes survey question “Would it be more beneficial for customers to have access to more data on the processes supporting their transactions and engagement with your organization?” More than 50% have the prevailing understanding that in some cases opening up data and sharing it with customers will go a long way in advancing the customer experience.

Figure 2 - Forbes Survey Question Results



Source: Forbes Insight, 2016

#### 4. Socio-Technical Digital Intelligence Factor

The Socio-Technical Digital Intelligence (SDI) factor is a measure of how well businesses make strategic decisions based on customers' social participation habits in digital cultures. Companies can use social media interactions to study consumer behavior with the goal of maximizing the customer experience. Digital cultures are virtual spaces where people engage for social, cultural and economic purposes. Social media platforms are digital cultures central to most people's lives and indispensable as they play an ever-increasing role. Possessing “habits, actions, and consumption patterns that impact the ecology of digital content,” management can approach consumer responsiveness in a way that can have an immediate effect on their products and services (Heick, 2013).

Unlike physical participation where communities are based on locale, the viewing of shared content in terms of actions and habit frames the culture of the environment. As people participate in social media communities, they become active meaning-makers of the digital media relevance to their world. Product and service reviews allow customers to be self-expressive about these transactions helping society develop a greater understanding of the complexities of buying and selling. Social media is a popular place to gain knowledge about consumer behavior. Businesses make meaning through new digital customer relation models that incorporate intellectual rigor and engagement in supportive and collaborative social media environments. With emphasis on corporate responsibility, digital engagement provides a different form of analytics that help businesses understand consumer behavior.

Customers learn about products and services in digital communities, updating their knowledge by evaluating and reviewing the positive or negative effects with the perception of others in the same context. As companies move toward full community participation in their sociocultural practices, this peripheral participation expands consumer analytics to be a function of the context

and culture in which it occurs. Shifting the corporate focus from buyer behaviors and buying analytics helps workers understand consumers in the social world from a participant perspective. Full participation which supports diversity and community relations is empowering, but moving away is disempowering (Lave & Wenger, 1991).

An example of asocial media activity is to have an employee spend time in a digital dialog with a group of customers using open dialog or polls to lead discussions. This immersive situated learning activity places workers in authentic learning spaces where the social community replicates real world situations. Since the activities of a domain are “framed by its culture,” the learning becomes meaningful given the accessibility of employees to customers in non-purchasing transactions. Long held beliefs about authentic activities with customers in their “ordinary cultural practices” should be considered a corporate ethical responsibility (Brown, et al., 1989).

Businesses should employ a strategic interactive approach to significantly influence on customer culture. Putting product descriptions online is the not the answer because customers just read the screen. Business transactions must have both an internal social context as well as an external social context. Digital data must connect employees to product development, but also to people and purpose. When companies build a comfortable online space that helps people make better decisions, they will understand what’s needed and wanted, and that’s good for organizational productivity and customer loyalty.

Social media provides corporations with a worldwide environment to reach common people in their respective domains. Consumers’ purchasing power is a strong factor in company’s bottom line. Therefore, customer relations are necessary for corporate sustainability. Treating them in a caring and humane fashion, not only will increase sales, but it will also increase the customer base. Businesses should leverages community-building and creative thinking to create social impact.

## 5. Factor Analysis

Factor analysis is mostly used mostly for data reduction purposes. With this method, we get a small set of uncorrelated variables from a large set of correlated variables to create an index to measure similar concepts. For this research, SDI becomes the index based on the factor analysis of customers’ digital transactions, business social media penetration, business digital intelligence, and business-customer interaction. The SDI index is designed to include evaluating the objectives of individuals and communities by focusing on their attitudes and values in digital cultures. The exploratory approach is used because businesses do not have a pre-defined idea of the SDI structure or how many other dimensions may affect the set of variables.

In digital sales (transactions), 81% of shoppers conduct online research before making big purchases, 44% of people go directly to Amazon to start their product searches, compared to 34% who use search engines like Google, Bing, and Yahoo to search for products, and mobile commerce makes up 30% of all U.S. ecommerce. Social media produces almost double the marketing leads, and about 46% of users count on it when making a purchase. The more social media followers a business has, the more visitors they lead to their websites (penetration). Of consumers who complain about a product online, a response is received within one hour (interaction). More than 70% of customers will spend more with a company because of good service. Customer engagement is set to be the primary driver of profitability and growth (An, 2016).

## 6. Summary

To compete in the social media age, businesses must aggressively pursue customer behavior data from three perspectives: the social transaction mind shift, the acceleration of digital intelligence, and transformative customer data insights. Only a qualitative analysis can be performed with limited data. As more consumers interacting with each other over social media to promote their favorite product, more customer insights can be collected. Businesses should use this opportunity

to understand their buyers, their needs and their dissatisfaction. The SDI index would be a way of improving products by capitalizing on customers' feedback and taking steps accordingly.

The good news is that the amount of data being generated through customer experiences is growing rapidly. Ninety-eight percent of executives say the volume of this data has increased over the past 12 months preceding its survey, and in almost all cases, the growth rate has topped 10% (Forbes Insights, 2016). Business digital intelligence involves developing ways to understand the world of the consumer, and ways they construct meaning by taking into account the ever-widening number of digital business transactions. When data analytics gets applied to the customer experience, thought provoking communities of practice with customers of the global world will transform corporate cultures improving building business-customer relations in a modern way.

## 7. Future Research

Based on the findings of the Forbes and Forrester studies, future research should capture business and consumer social media interaction data. Factor analysis can then be conducted from a quantitative perspective, showing trends in business digital intelligences and consumer purchasing loyalty. Future research may also consider using different indicators involved in purchasing such as, customer feedback, social media environment, and customer satisfaction, in addition other indicators to capture the socio-technical construct.

## References

- An, M., 2016. The Ultimate List of Marketing Statistics. [Online] Available at: <https://www.hubspot.com/marketing-statistics> [Accessed 10 March 2017].
- Brown, J., A., C. & Duguid, P., 1989. Situated Cognition and the Culture of Learning. *Educational*, 18(1), pp. 32-42.
- Forbes Insights, 2016. Data Elevates the Customer Experience: New Ways of Discovering and Applying Customer Insights, Jersey City: Forbes Media.
- Lave, J. & Wenger, E., 1991. *Communities of Practice: Learning, Meaning, and Identity (Learning in Doing: Social, Cognitive and Computational Perspectives)*. 1st ed. Cambridge: Cambridge University Press.
- McCormick, J. & Little, C., 2016. *Optimize Customer Experiences With Digital Intelligence*, Cambridge: Forrester Research, Inc..