E-Commerce

Topic #4:  New E-Commerce Technologies and Applications

Introduction  E-commerce is an emerging area of business and web technologies. New technologies and new applications of technologies are continuously introduced to e-merchants, for instance, AI (artificial intelligence), IoT(Internet of Things), analytics, and cloud-based CRMs (Customer relationship managements) are fast becoming dominant technologies in e-commerce industry in 2017. These technologies used to sound imaginary, but they are now used in e-commerce in reality.

On the other hand, the use of drones is going to change the concept of ecommerce? For example, even small business owners will be able to use them to deliver products and that too without spending too much on it. With the debut of no-drive Uber in Pittsburgh, PA, can a no-driver car be used by E-Commerce startups to deliver products to online shoppers?

The use of technologies in e-commerce has three key objectives: they should improve effectiveness, efficiency, and productivity. Effectiveness is the degree to which something is successful in producing a desired result, which is the success. Efficiency is the (often measurable) ability to avoid wasting materials, energy, efforts, money, and time in doing something or in producing a desired result. In a more general sense, it is the ability to do things well, successfully, and without waste. Productivity is a measure of the efficiency of production. For example, some organizations like IBM already initiated massive research through their dream project like Watson analytics and artificial intelligence.

If you are already an E-Commerce entrepreneur, how would you take your existing E-business to the next level? The main challenge is that E-commerce companies compete not just against other small brands, but also such giants as Amazon, eBay and Alibaba.com. As technologies are in the e-marketplace, e-merchants have all reasons to keep up with them. The important thing is to notice the debuts of them, and to learn to use them in the way to keep the e-commerce more efficient, effective, and productive.

Functionalities and functions.  As the time this lecture note is writing, most students have been involved in the use of e-commerce technologies in many aspects such as booking hotel rooms, exchanging unused goods, bidding for the special event at a national park, and certainly taking courses in addition to just purchasing things online.

Functionality is the quality of being suited to serve a purpose well. It is the range of operations that can be run on a computer or other electronic system. In terms of information systems and technologies, functionality refers to the working of a specific object like a device, a software etc. By the way, the word “function” is used to describe the special purpose something has.

The minimum requirement of functions of an e-commerce website are:
- a secured interactive environment;
- a full list of products or services or both;
- a full featured shopping cart software for customers to select products;
- an easy-to-use order form;
- convenient and reliable payment methods;
- a well-developed database management system for managing customer data;
- an analytical tool for motoring and auditing business data;
- a convenient way for keeping and retrieving information about orders for both customers and e-merchants; and
- an interactive support and feedback system.
Rahman (2014) suggests an architectural framework for integrating various information technologies and information systems for e-commerce. These technologies could range from database management, analytical tools, data mining, intelligent agents, telecommunication, and the infrastructure of Internet. The architectural framework focuses on six layers of functionality or services:

1. Application services.
2. Brokerage services, data or transaction management.
3. Interface and support layers.
5. Middleware and structured document interchange, and
6. Network infrastructure and the basic communication services.

In order to meet the above features and functionalities, software vendors began providing packages that combine website management, e-business features, and e-commerce functions as a software platform. The following is a list of features that recently find their room in the e-marketplace.

- **Mobile e-Commerce and Website Development**: Mobile websites offer all of the content of the full version website, but the intelligent layout makes it comfortable to view from your smart phone or tablet.
- **Pricing Capabilities**: Enable the control over how to price products including options, quantity discounts, and much more.
- **Product Pages**: Integrated feature that enables quick setup of product pages so that they best display special offerings to shoppers.
- **Merchandising and Marketing Tools**: Search engine is embedded with tools to market the website.
- **Shipping Options**: Shipping features incorporated in the platform for choosing the shipping method be easier.
- **Visitor Experience**: Enable e-merchants to create a user-friendly, visually compelling site with innovative features to make the website stand out.
- **Order Management**: Designed to streamline the fulfillment process and give the customers great service.
- **Site Management**: Put in or take out new products, change pictures, prices, add customer reviews, all from an easy-to-use browser based interface.
- **Checkout**: A straightforward checkout process to help customers complete their orders smoothly.
- **Content Management**: Choose from specially configured content sections that can help e-merchants present information in a way that best showcases that material.

When it comes to the implementation of e-Commerce websites, it is all about functionality, features and design. The above mentioned features could serve as a guideline for anyone planning on running an online business and have an e-Commerce website.

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**Mobile Eats the World**

As discussed in a previous lecture, mobile transactions are growing rapidly, mobile commerce is no longer a novelty, it is a reality. According to an IBM report, smartphones and tablets are having a meaningful impact on how consumers purchase, and some mobile commerce apps are even reshaping traditional businesses.

Many software developers have released mobile applications for a wide variety of platforms including iOS, Android and Windows Phone. Mobile applications are an amazing way for marketers to increase sales for their products or services and create an everlasting relationship with clients. Recently e-merchants have been developing mobile applications to keep up with technologically-savvy consumers. Citi Bank, for example,
allow their Android and iOS customers to use m-commerce application to access their finances, customizable charts of payee spending and compare personal spending habits with general consumer data, analyze personal spending habits, filtering by location, income bracket, age group and purchase category. Domino Pizza offers its mobile ordering app to more than 80% of smartphones, including Android, iOS, and Windows Phone users.

According to a Web content writer and translator named “Silvia” of Zeendo, these mobile commerce applications generally provide the following advantages.

- **Major accessibility.** Thanks to the use of mobile phones users will be able not only to connect to the online store 24h, but they will also be able to do it from anywhere. This way the possibility of making sales will increase considerably.

- **Easy purchase process.** This innovative process makes it easier for consumers the task of purchasing products, since the applications designed for mobile phones are simpler and shows the consumer the specific information of the product he/she needs to buy.

- **Instant updating of the information.** Thanks to the use of mobile phones, the user can be contacted in whichever moment, the user being able to receive and read instantly the new update sent by the company, without the necessity of being connected to a PC or laptop. This way transactions are speeded up and a lot of time is saved.

In addition to the above three, m-commerce application must support **synchronization.** Synchronization occurs when a mobile device communicates with applications on a personal computer or a server.

While m-commerce is fast growing but fraud is outpacing it as cybercriminals are migrating to less protected, “soft” channels. In 2015, RSA saw that 45% of all transactions originated from the mobile channel while 61% of fraud attempts were made from a mobile device. As organizations continue to roll out more mobile services to customers and employees begin to depend on them in order to do business on their behalf, the mobile channel has become rife with cybercrime.

Mobile is eating the world and becoming the dominant channel for instant communication and the expressway for banking and commerce worldwide. In fact, by 2020, it is estimated that 80% of adults on earth will have a smartphone. Mobile devices helped influenced more than $1 trillion in total purchases in 2015 between online and offline transactions, and revenue from mobile e-commerce sales are projected to reach $516 billion by 2017.

By the way, from mobile devices to routers, hackers are always in search of non-PC platforms (and likely less protected) to compromise. As mobile continues to eat the world, so will the attacks waged against mobile devices, mobile services, and mobile users. The so-called “multi factor authentication”, such as “two factor authentication”, can be a solution. Google and PayPal are two sample site that adapt this authentication methodology. Two Factor Authentication (2FA or TFA) is a technology that requires not only a password and username but also something that only, and only, that user has on them or can access. One simple practice is to require a user who submit correct combination of username and password to choose to be sent another passphrase via either email or sms (Short Message Service). Once the user receives the passphrase, the user must enter it within a limited time period to obtain access. For example, after submitting username (such as email address) and password to a website, which verifies that it’s actually you, the app sends a text message to your smartphone, which contains an eight-digit code. The app then prompts you to enter the code to verify your identity. As soon as you enter the code from the text message, the app makes a note of your new device and logs you right into your dashboard. By the way, a website that only requires users to enter username and one password, it is considered a single-factor authentication website.
As organizations transform the way they interact with customers, this has not gone unnoticed by cybercriminals as evidenced by the rise in fraud attempts originating from the mobile channel, increasing 173% increase between 2013 and 2015 compared to a mere one percent in the Web channel Mobile is not the only platform at risk, however. Other non-PC based platforms have been targeted including routers which were subject to malware that allowed attackers to gain nearly undetectable remote control to launch attacks against other routers and systems on the same network (RSA, 2016).

**Artificial Intelligence**

AI stands for *Artificial Intelligence* and is usually defined as the science of making computers do things that require intelligence when done by humans. In the past, Hollywood movies offer several examples of computers with human-like qualities; however, the use of AI in our daily life is no longer just a scene in movies. Gartner predicts that by 2020, 85% of interaction between customers and retailers will be through artificial intelligence customer service programs. Artificial intelligence (AI), which has demonstrated its value in industries like marketing, healthcare and finance, is now making a splash in online commerce. As a matter of fact, the confluence of AI and e-commerce has reached a point that needs e-merchants’ attention.

AI could not only transform the millions of online transactions that occur every day, but also in-store purchase behaviors’. A number of companies already employ AI in their ecommerce processes today. Netflix uses AI to provide personalized recommendations to subscribers based on their previous streaming habits. Under Armour, with the help of IBM’s Watson, uses AI to help its customers track their health and fitness activities.

As of January 2017, AI have been used in the fields like product recommendation, basic customer service and tech support, intelligent agent, assortment intelligence tool, and voice-powered search. Actually, several studies have pointed out that the use of natural language processing is making search more intuitive. Most of consumers have experienced how chatbots are personalizing the online shopping experience. Although there are still room to improve, AI technologies have been applied to e-commerce. Try the North Face - Personal Intelligent Shopper site at https://www.thenorthface.com/xps for your own good.

**Analytical tools**

*Analytics* is the discovery, interpretation, and communication of meaningful patterns in data, and an analytical tool is a tool with which analysts can perform business analysis. *Business analytics* of e-commerce, particularly web analytics, is a fast growing field and there are many tools available in the market to serve the needs of organizations. *Web analytics* is the measurement, collection, analysis and reporting of web data for purposes of understanding and optimizing web usage. It typically provides information about the number of visitors to a website and the number of page views. The use of Web analytics is said to enable a business to attract more visitors, retain or attract new customers for goods or services, or to increase the dollar volume each customer spends.

The main purpose to conduct e-commerce analytical study is to understand and grasp the trend of consumers’ shopping behaviors. It has been proven true that generating traffic to an ecommerce site is helpful only if that traffic produces sales. For example, a flower shop in Florida can create a website to share information about Powerball-winners news, yet how likely this service produce customer is a topical that needs to be well studied. Those who have spent years studying “data smart” companies believe e-merchants are already challenged by the use of analytics, although the use of data to make decision is nothing new. For such e-commerce, it may be necessary to discover why visitors leave by building customized funnel analytics reports to help identify a confusing point in the e-commerce process where most customers are abandoning their shopping carts.

Google Analytics (GA) is a free online tool which is used by millions of websites all over the world. Installing GA is pretty easy. E-merchants just need to add a small tracking code in the head section of all the pages on your website. Almost all major shopping cart
vendors provide integration with Google Analytics. The following is a sample list of E-Commerce analytic tools available in the market:

- Clicky. A web analytics tool for visualizing and analyzing website traffic. The following website is https://clicky.com/.
- Google Analytics. A freemium web analytics service offered by Google that tracks and reports website traffic. The official website is https://www.google.com/analytics/.
- RJ Metrics. Was a software as a service business intelligence platform, but has recently rebranded as an analytics platform. The official website is https://rjmetrics.com/.

The use of analytics in e-commerce is a positive improvement and should be used not only by analysts, but by marketers, business owners, developers, advertisers, and pretty much everyone involved in the e-commerce.

NoSQL

According to Amazon, NoSQL is a term used to describe high-performance, non-relational databases. So, presumably, NoSQL is short for “no structure query language”. NoSQL databases utilize a variety of data models, including document, graph, key-value, and columnar. NoSQL databases are widely recognized for ease of development, scalable performance, high availability, and resilience. Below are several resources to help you get started using NoSQL databases.

In terms of database structure, there are no tables of structured columns and rows. In a sense, NoSQL trades consistency for availability, speed, and flexibility. The rise of NoSQL was recently. This technology becomes popular with large Internet businesses, including Google, Facebook, eBay, and Amazon. These companies need to access significant amounts of complex information very quickly.

From giants like Walmart and Tesco, to specialty brands like Fanatics and Nu Skin, e-merchants are adopting NoSQL database technology to build modern applications, manage peak-load traffic, reduce costs, and drive revenue. E-Bay said they were able to leverage NoSQL for multiple uses, including cache for 100M+ session tokens per day. Office Depart announced that they were able to drive $4 billion online revenues due to the use of NoSQL. As companies are applying NoSQL to support e-commerce, e-merchants need to think about how the NoSQL technologies should be integrated. Couchbase (2017) suggests the following is a list of five examples.

- Shopping Cart: Companies can power their shopping cart service by using the feature of “built-in cache” for efficient performance at scale.
- Product & Pricing Catalogs: The use of JSON-based data model with fast memory-first architecture to power services like product and pricing catalogs.
- Shopper Profile Management: Deliver fast and seamless login, authentication, and profile management.
- Personalization: To deliver great personalized experiences by using NoSQL technologies to store, update and access consumer data and business rules with sub-millisecond latency.
- 360 Customer View & Loyalty: Aggregate and run near-real-time analytics on customer data from multiple channels – websites, mobile apps, call centers, chat sessions, social media, and in-store – and to manage loyalty programs.
In many aspects, NoSQL databases have a more flexible model than RDBMSs, making it easier to organize large amounts of data with varied formats that change over time. Yet, it is necessary to note that NoSQL databases aim to provide unlimited scalability, delivering consistent high performance, however big the data set becomes and however many nodes the database is spread across.

**Big Data**

The term “**big data**” describe the countless amount of structured, semi-structured and unstructured data that could be mined to provide useful information. It is a collective methodology of data mining. The term “**data mining**” refers to the practice of examining large amount of potential databases in order to generate new information. To all e-merchants, data could stream from all possible media: from phones and credit cards and televisions and computers; from the infrastructure of cities; from sensor-equipped buildings, trains, buses, planes, bridges, and factories. Yet, the data flow so fast and need to be collected, processed, and analyzed in order to provide useful information.

Sample use of big data in e-commerce include: (a) track people’s preferences, (b) monitor shoppers’ social media, (c) explore shopping trends, and (d) study customer journey and behavior. According to Jerry Jao (2017), big data has the capacity to provide: (a) More Organized Data, (b) Data-Driven Decisions, and (c) Personalized Offers. A good example of this comes from another one of our clients, Bikeberry.com. The online store collected numerous customer data, including browsing patterns, login counts, past purchases and more. BikeBerry.com then used that information to create 5 different offers, namely free shipping, 5% off, 10% off, 15% off, and $30 off new products. Each of their customers received an individually-tailored offer, which is determined by our Customer Profiling Engine to be more relevant to their preferences and past behavior.

As a result, Bikeberry’s sales saw an increase of 133% and user on-site engagement increased by ~200%. What’s more, Bikeberry.com was also able to save more money by not offering discounts that are too big to customers who didn’t need a huge incentive to convert.

The biggest challenges that e-merchants face are to determine how to obtain value from big data, and how to decide where to start. Many e-merchants get stuck at the pilot stage because they do not tie the technology to business processes or concrete use cases. Bjorn Radde (2014) suggests online retailers with the following five ways to improve their business with big data in the following areas:

- **Optimized product portfolio**: The analysis of large amounts of structured customer data allows detailed target group analysis.
- **Optimized prices**: An online retailer can adjust dynamic the price of a product due to the high transparency of the Internet. Big data offers comprehensive market analysis for a dynamic pricing policy.
- **Optimized online store**: Different start pages or landing pages can be displayed depending on the region or target group. Furthermore, different preferences regarding the product range for men and women can be displayed.
- **Optimized online advertising**: E-merchants can target their advertisements precise to their customers. Real time advertising can be cheaper and more effective. Therefore, online retailers can reduce advertising costs and increase their media reach.
- **Optimized customer service**: E-merchants can use the complete customer history enriched by some social media information about the customer during the customer service.

Google Trends is one of the simplest and most well-known Big Data-related services. For example, Google Trends compiles information about who’s searched for what. That might not sound like much, but it’s an excellent indicator of which subjects are piquing public curiosity, and it’s been found to be a powerful predictor of trends. In fact, data from Google Trends has even been found useful in predicting the Dow Jones industrial average.
E-Commerce marketers can take advantages of the ability to compare the volume and popularity of search queries can give you a good general idea of supply and demand in your field.

With the rise of big data, e-mERCHANTS all have heard remarkably several success stories. However, it needs to be understood that big data is a potential disaster from the point of view of security and privacy. Trusting untrustworthy third parties is inherently unwise. Today’s computers, cloud servers, hosts, laptops, mobile devices, and so on are all totally riddled with security vulnerabilities. For various reasons, things seem to be getting worse overall, not better.

Cloud Computing

**Cloud computing** describes the hosting and delivery of information and on-demand computing resources on the Internet using a remote network of servers. The alternative is storing, managing, or processing data on a local server or personal computer. Many technology applications that gained popularity as installed software are now preferred as cloud applications to the ease of use and reduced maintenance.

Cost, time, quality, and security are the primary reasons for moving a business application or data center to the cloud. A B2C site can use cloud-based service such as Amazon’s AWS (Amazon Web Services) to enjoyed cloud-based hosted, secured, flexible, and scalable infrastructure. Companies from financial institutions to commodities suppliers can rely on cloud-based service to power their B2B infrastructure and host their e-commerce applications. Those who want to step in the m-commerce can use cloud-based services to quickly build cross-platform m-commerce sites.

According to Vaishnavi Kulkarni (2015), Cloud computing is another disseminating sector that has no way back. Cloud is impacting the growth of e-commerce sector with very considerable steps and has key role in its advancement. CFOs and CIOs are initiating to the adoption of Cloud after knowing its technical and financial benefits.

General issues that are faced by e-commerce applications using traditional methods are: downtime, no flexibility, high capital expenses, and security issues. Benefits of Cloud computing in e-commerce applications that can overcome the challenges providing wonderful results are:

- Scalability
- Remarkable Cost savings
- Increased speed
- Increased security
- Easier management
- High availability

After adoption of Cloud in e-commerce applications, Cloud has impacted e-commerce in very positive way,

- Cloud-based e-commerce applications allow businesses to respond swiftly to market opportunities and challenges (provides flexibility)
- Cloud-based e-commerce applications enable IT and business leaders to evaluate new opportunities without large upfront investments.
- IT leaders must be well aware with the cloud based approach and it’s results, in order to choose the right solution for their business needs.

The emergence of cloud computing is creating a new service ecosystem which will integrate all the E-commerce resources and facilitate the new service modes. Without a doubt, cloud-based e-commerce is here to stay. Putting an application in the cloud with a trusted partner and in a solid development platform provides indisputable speed, economic value, and significant benefits in terms of customer acquisition and retention. Cloud
computing offers numerous benefits to the ecommerce. The cost saving in infrastructure, the reliability of a stable platform and the speed of building ecommerce website are the prime benefits of the cloud server.

The Internet of Things (IoTs) is moving from fiction to reality, though slowly. For years, IoTs and e-commerce seem to evolve in parallel. However, they are now embarking on a common journey where every connected object becomes a potential e-commerce real estate. The term, IoT, generally describes the technology that connects any device with an on and off switch to the Internet and/or to each other, so they could work interactives. Devices could include everything from cellphones, coffee makers, washing machines, headphones, lamps, wearable devices and almost anything else you can think of. The recent evolution of IoT enables all devices, sensors, microprocessors, data hubs, networks, artificial intelligence software and analytics programs to provide a better data inter-exchanging system, so e-merchants can improve their: (a) inventory management, (b) shipping/delivery tracking, and (c) business opportunities.

Many experts say that IoT (e.g., automation, personalization in apps and websites, etc.) will enhance the customer experience, but before adopting IoT, digital retailers first need to identify their problem areas and technology options. Although there are many different solutions available in the IoT space — from RFIDs (Radio-Frequency IDentifications) to beacons to BLs (Bluetooth low energies) — there is no “one size fits all” solution. Even similar problems may need to be treated uniquely due to different constraints, environments, audiences, and constructs.

Risks will remain mostly unknown, but another major hack will make headlines and create another Big Data quandary. A refrigerator used to wage DDoS (Distributed Denial of Service) attacks as part of a botnet. A home alarm system used to host a phishing attack. Hackable baby monitors exposing your family to strangers half a world away. While it sounds like the plot of a science fiction movie, it is the reality of today’s Internet of Things (IoT).

While emerging as well as traditional hardware and software vendors attempt to wrap their heads around varied and sundry IoT mechanisms (both for execution as well as reporting), it should come as little surprise that cybercriminals are now planning to steal data collected through those same IoT devices. To date, the most high-profile examples of IoT hacking have been controlled hacks in the automotive industry, but it also inspired the recall of more than 1.4 million vehicles.

These “controlled hacks” demonstrate that when it comes to the Internet of Things, cyber attacks are not just possible, but also inevitable. This is just the tip of the iceberg. From Microsoft Kinect to Nest to smart streetlights that listen to conversations occurring just below them, in time the Internet of Things will not only be pervasive, but also intrusive.

Like many innovations that seek to make our lives easier, the Internet of Things represents both opportunity as well as risk. It also raises the age old question of how much privacy we are willing to trade off for convenience. With more than six billion connected devices worldwide expected by the end of 2016, there is no doubt that cybercriminals will attempt to exploit a myriad of weaknesses, although full-scale attacks are still premature. However, we do expect to see more controlled hacks raise headlines and awareness of the vulnerability we face from living in an interconnected world.

A make-or-buy decision is the act of choosing between manufacturing a product in-house or purchasing it from an external supplier. Like any business project that aims at digitizing the business processes, e-commerce startups often face to a challenge: to make or to buy software tools. With limited capital and budget, E-Commerce startups typically choose to
buy or lease over-the-counter toolkits. A simple strategy is to use the existing toolkit and modify them if there is need to customize the features and functionalities.

One question raised by newbies is: what programming language is the best for developing e-commerce websites? Actually, most experts end up reaching a consensus that there is no “best language”. PHP, Ruby on Rails, Java, Coldfusion, Python, ASP.NET, and Perl are all good candidates, although PHP seems to be the leading language. Rajat Tyagi (2016) suggests that the language you know better is the best choice.

Thomas Muller (2015) believes that PHP open source programming language is the best for website startup & it fits in well with MySQL which is a type of database. The PHP would normally get a list of products from your database and display them on the web page. Almost each CMS can customize with PHP so it becomes a perfect e-commerce site that looks completely intuitive, and allows its users to find what they want in a matter of seconds.

Many over-the-counter toolkits are available to help new-comers to build and manage online stores. For example, Shopify is a tool for creating online store. The following is a sample list of tools available in the e-marketplace to facilitate the constructions of e-commerce sites.

- HappyFox is CRM tool for online retailers.
- Shipwire
- Cratejoy
- Celery
- AddShoppers

Choosing the best e-commerce platform is a difficult decision. The Ecommerce Platforms website provides a review of available platform and tries to offer an unbiased comparison of the good, great, bad, and ugly of online store building and ecommerce shopping cart software. The details are available at http://ecommerce-platforms.com/

Frank Lammer (2016) maintains a list of application software that could provide quick E-Commerce solution. The address to his blog is https://blog.fortrabbit.com/e-commerce-status-quo-2016. The following is a list of new e-commerce software that have just made their debut to the E-Commerce world.

- Craft commerce is a PHP CMS system with a good reputation. The maintainers Pixel & Tonic have recently released version 2.5, along with the new Craft commerce — an e-commerce solution based on Craft. It looks quite modern. A license currently costs $999.
- Sylius from Puwel Jedrzejewski (Poland) is still under development and looks promising. ~2k GitHub stars
- Sellvana is an upcoming e-commerce solution by unirgy and others. 5 GitHub stars
- Elcodi Symfony components, Composer — keep talking. This is Elcodi from Barcelona, another young promising candidate. ~390 GitHub stars
- Thelia (still in version 2) from France is an e-commerce based on Symfony2 components with Smarty 3 templating engine. ~550 GitHub stars
• Mothership is another newcomer that promises to combine e-commerce with a point of sale (ePOS) solution. ~15 GitHub stars
• Arastta (from the comments below) is yet another newcomer. The core team behind it is Misiwsoft which comes from Istanbul. Arastta is based on Symfony components and also follows the API approach. There is a free open source edition and a hosted one. Version 1.2.1. was released in December 2015. ~100 GitHub stars
• Yo!Kart (also comments) is rooted in India (I dig this). It's available as a hosted and a self-hosted version, it's not really open-source.

E-commerce marketing tools

E-commerce marketing is the practice of guiding online shoppers to an e-commerce website and persuading them to buy the products or services online. In the past, marketing specialists developed strategies such as:

- **Content Marketing**
- **Search engine optimization.** The purpose is to help a website to rank higher in organic search engine listings
- **Social Media.**
- **Affiliate Marketing.** Affiliation with better-known websites through referral marketing or banner advertising
- **Mailing List.** Retention of current customers through email marketing. While new marketing channels are introduced, email marketing is still one of the most effective channels for growth.
- **E-Public Relationship.** ePR is the strategically planned use of internet-based and new media tools and technologies to build and to maintain a dialogue (Two-way communication) between an organization and its publics.
- **Pay-Per Click Advertising.** This is an internet advertising model used to direct traffic to websites, in which an advertiser pays a publisher (typically a website owner or a network of websites) when the ad is clicked. One available model is the use of tools such as Google Adwords.

The following is a sample list of marketing tools.

- MailChimp & Mandrill.
- Good Email Copy.
- Metrilo. As introduced previously, Metrilo combines CRM, analytics and Email Marketing.
- SumoMe.

Social media and referrals

- Mention
- ReferralCandy

Content-marketing tool

- BuzzSumo
- Contentmarketer.io

Marketing automation is becoming digital marketing best practice.

- Betaout

As of January 2017, several new marketing strategies have been developed for e-commerce.

- Enhancing the Mobility. Research results revealed the swift of online shoppers’s preferred device from traditional device to mobile device. Content must be available for mobile devices.
- 70:20:10 Model: Use the 70:20:10 model to structure your content marketing strategy so you spend 70% of time on content you know is effective, 20% on innovative new types of content and 10% of time on truly risk projects that could possible drive a
major payoff. By the way, Morgan McCall and his colleagues working at the Center for Creative Leadership (CCL) are usually credited with originating the 70:20:10 ratio.

- More Videos.

References:


Review Questions

1. Which of the following probably is not a new technology or application to be used for e-commerce websites?
   A. cloud-based Customer relationship managements
   B. Artificial intelligence
   C. Internet of Things
   D. Global Positioning System

2. The use of technologies in e-commerce has three key objectives, which is not one of them?
   A. Productivity
   B. Replaceability
   C. Effectiveness
   D. Efficiency

3. Which statement is true?
   A. Functionality is the ability to avoid wasting materials, energy, efforts, money, and time in doing something or in producing a desired result.
   B. Scalability is a measure of the efficiency of production.
   C. Effectiveness is the degree to which something is successful in producing a desired result.
   D. The term "efficiency" describe the special purpose something has.

4. The feature of "pricing capability" describe __.
   B. how an e-commerce/e-business software can enable the control over how to price products including options, quantity discounts, and much more.
   C. how an e-commerce/e-business software allows an e-merchant to incorporate pricing strategies.
   D. how an e-commerce/e-business software can provide a on-click price check.

5. Which is not an advantage that is commonly seen in a mobile commerce application?
   A. Major accessibility
   B. Easy purchase process
   C. Instant updating of the information
D. Customer demographic identification

6. Two factor authentication is a methodology of __.
   A. shipping option
   B. access control
   C. checkout procedure
   D. content verification

7. __ is the discovery, interpretation, and communication of meaningful patterns in data, and an analytical tool is a tool with which analysts can perform business analysis.
   A. E-commerce traffic evaluation
   B. Analytics
   C. Database administration
   D. Data mining

8. A company choose to develop a database without using fixed table scheme. This company is possibly using the __ technology.
   A. Big Data
   B. Cloud-based database design
   C. NoSQL
   D. AI-based data modeling

9. __ describe the countless amount of structured, semi-structured and unstructured data that could be mined to provide useful information.
   A. Big Data
   B. Cloud-based database design
   C. NoSQL
   D. AI-based data modeling

10. Which is not an example of how hacking techniques is used in IoT-based service?
    A. A refrigerator used to wage DDoS (Distributed Denial of Service) attacks as part of a botnet.
    B. A hospital was attacked by ransomware and the data were hold as hostage.
    C. A home alarm system used to host a phishing attack.
    D. Hackable baby monitors exposing your family to strangers half a world away.