

# Identity in the retail industry: The paradigm shift in retail management

Ali M. Al-Khouri<sup>1,2</sup>

<sup>1</sup>Director General, Emirates Identity Authority, United Arab Emirates

<sup>2</sup>Professor of Identity and Security, British Institute of Technology and E-Commerce, London, United Kingdom

## Email address

ali.alkhouri@emiratesid.ae

## To cite this article

Ali M. Al-Khouri. Identity in the Retail Industry: The Paradigm Shift in Retail Management. *American Journal of Business, Economics and Management*. Vol. 2, No. 3, 2014, pp. 76-87.

## Abstract

The retail industry is in the throes of transformation. Multi-channel retailing has become the norm of the day with the advent of mobility and self-service models. Retailers are seeking to stay ahead of the technology curve and meet new customers' demands and buying behavior. Today's customer is more consummate and discerning and not averse to sharing personal information for a better and perhaps preferential treatment. Thus, retailers are seeking to be ubiquitous in today's digital world trying to garner customer information in their efforts to maximize their reach and points of sale. The role of modern identity management in the retail industry thus plays a dual role. Managing the identity of the customers while grappling with the employee identities to meet the challenges of the reality of remote operations. In this context, we make a cursive examination on the transformation in the retail industry and the data driven decision making that is expected to drive the industry. We also shed light on one of the world's most renowned identity management infrastructures—in the United Arab Emirates (UAE)—and examining how reliable identity management systems can facilitate and enable the retail industry in their digital transformation.

## Keywords

Retailing, Digital Identity, Identity Management, National ID, E-Economy, Digital Transformation, Multi-channel presence, Data Driven Decision making

## 1. Introduction

The world is a flux induced by technological advances. In fact, the world has shrunk to a point of convergence dictated by universal market access and a well-informed, discerning customer.

Multi-modal and multi-channel customer service delivery has become the norm of the day with the potential customer more likely than ever to interact with the seller impulsively. The customer acquisition and retention cycle (see Figure 1) then assumes a new paradigm in communication and interaction with the customers in the digital world largely influenced by the Internet.



Figure 1. Customer acquisition & retention cycle

The question then is does the retailer have the necessary information to reach the customer when a customer need arises? Can a point of sale be created at the point of need? It is in this context that retail industry need to be examined and the impact of this digital transformation on the retail supply chain. It is increasingly becoming imperative that a brick and mortar presence of sale is complemented by a

virtual presence on the web and vice-versa.

Studies indicate that more retailers are going global to capture a larger share of the \$1.4 trillion e-commerce market (Dean et al., 2012). The retailers are constantly trying to find customers by cutting through the layers of value perception with their products and services aided by enhanced brand presence, which feeds the purchasing power of targeted customers.



Figure 2. Retail and marketing transformation

All this push us to say that the customer buying in general is influenced by hitherto unaddressed and little understood factors. Besides, in the clamor to reach out to the customer, the retailers tend to contribute to the chaos in the ethos of the buyer-seller relationship. The reality is that a need can be prompted practically at any point in time and space. The complexity arises when customers seek instant gratification.

feeding the higher purchasing power of the customers (see Figure 2).

Thus, the retailer of today seeks to be present at the point of time and space where the need arose and also to satisfy this need. The retailer is seeking to be ubiquitous and more! The retailers are constantly trying to find the customer by cutting through layers of value perception with their products and services aided by enhanced brand presence

The key here is then to understand where the customer could be, what he/she might need and when. If Multiplexes (themed malls) with their vast retail space accord visibility to the brands while providing better customer experience, the Internet provides the potential to reach the customer in real time. This seeds the transformation in relating to the customer and the need to identify the customer.

While identification of the customer is one end of the spectrum, the increasing digital transactions ecosystem has made the employee identification equally important at the other end of the organization identity spectrum (see Figure 3).

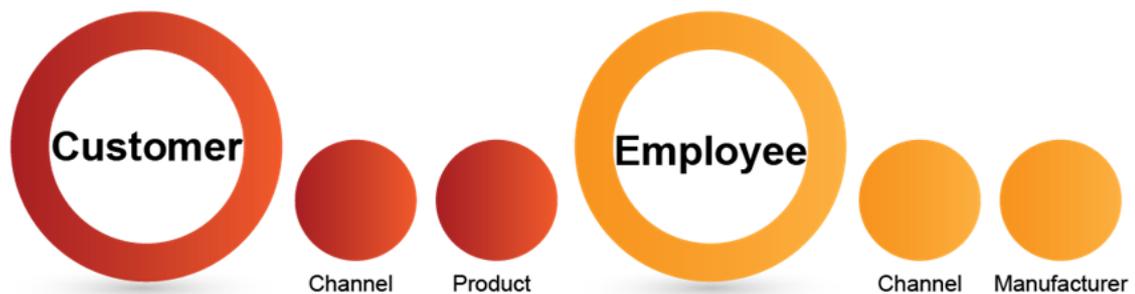


Figure 3. Retail organizational ID spectrum

The impact of digitalization has been immense on everything related to a seller reaching the buyer and vice versa. The social networks have added a new dimension to the customers' online behavior. Equilibrium is sought to be reached between the real identities of persons with the digital identities and more often than not it is found to be extremely difficult to manage a proper correlation between the identities leading to security and transactional issues.

The mobility accorded by the smart phones and the availability of Internet across these devices has added more proxies for real identities. The retailers, in their quest to retain customers and encourage repeat purchases, resort to loyalty and award programs and tend to issue identification of their own. However, these identification systems do not provide the level of trust for users to engage in (more) online transactions.

Besides, identity systems in use are not sufficient to combat the globally growing crime of identity theft, which is wreaking havoc on economies worldwide. So how can the retailers identify their customers and is there a role for the governments to facilitate this?

The objective of this article is to examine the challenges faced by the retail industry in managing such identity infrastructures in the complex physical and online retail landscape and drive a positive transformation. We provide an overview of one of the leading and renowned government-owned identity management infrastructures that aims to reap the benefits of the Internet economy, namely the UAE national identity management infrastructure, which is envisaged to play a significant role

in pushing the retail industry into new frontiers.

The article is structured as follows. In section 2, we outline some of the challenges and emerging realities of the digital age facing the retail industry. In section 3 we shed light on the evolution of omni-channel retailing, where concepts of big data analytics are used to support business integration. In section 4, we present some statistics around the impact of e-commerce on the retail industry and examine the existing electronic identity management practices and why they are not sufficient to combat identity theft in the retail industry. In section 5, we provide an overview of the UAE's national identity management infrastructure and explain how the government aims to provide individuals, businesses, and government organizations with secure and reliable management of digital identity and personal data. The article concludes in section 6.

## 2. The Shift in Retail Mindset and Dynamics

### 2.1. Customer Identity

The digital world boasts of a 35% penetration of the Internet estimated to grow to 40% by end of 2014, with the highest number of users accessing the internet from Asia (ITU, 2014). As per the ITU estimates 44% of the world households will be connected to the internet with the current value reading at 41% internet connected households.

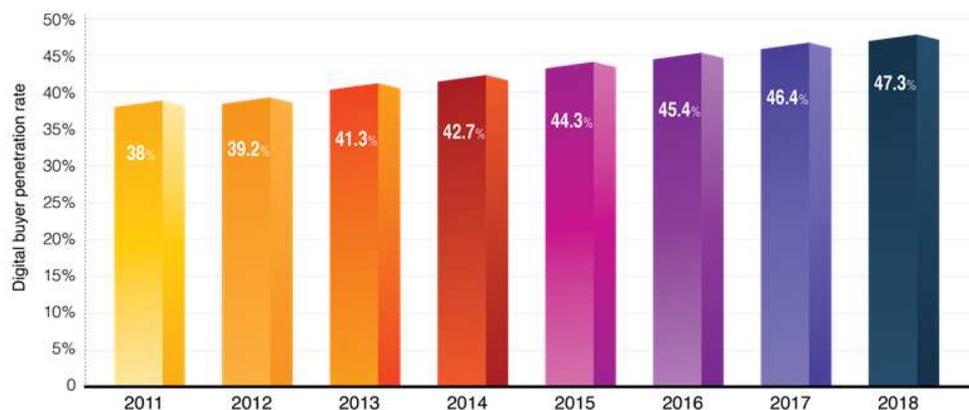


Figure 4. Digital buyer penetration (Statista, 2014)

With this the digital buying is expected to show a steady increase reaching nearly 48% of online users being digital buyers by 2018 (see Figure 4). There is an ever growing trend of the customers making online purchases for physical gratification. This is estimated to result in a sale worth 2.356 Trillion USD by 2018 doubling up from the 1.2 Trillion USD in 2013 (see Figure 5).

It is clear that retailers have an opportunity to capture new customers online and increase sales through a compelling omni-channel strategy (Walker Sands, 2013).

From a retail perspective, knowing who among these are the most likely to buy particular products or consume particular services is a decisive set of data that needs careful reading and detailed analysis.

The key to the analysis is the knowledge about the customer. This knowledge constitutes not just the repeat purchases but also the buying patterns, behavioral patterns. The driving factor for such knowledge is the identity of the customer.

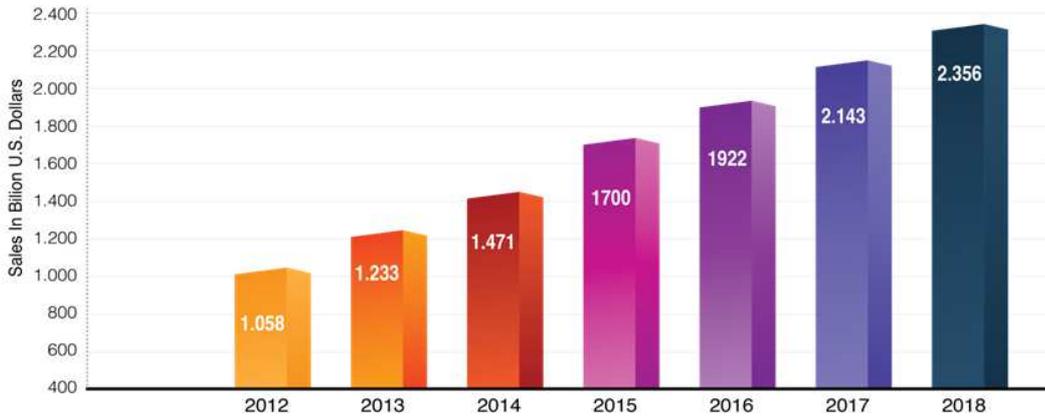


Figure 5. Estimated increase in e-Commerce (Statista, 2014)

## 2.2. Employee Identity

While identifying the customers' results in potential increases in sales and revenues, identification of employees plays a key role on containing operating costs.

As the pressure to deliver personalized and integrated services to customers increases, the increased digitalization results in large silos of data wrought by numerous applications running to provide omnipresence for the retailer. The required presence of employees at all stages of customer life cycle assumes significant importance. This is compounded by the fact that virtual transactions are complemented by physical transactions conducted by real

people within the organization serving the customer.

In this environment, a typical retailer is besieged by issues of high employee turnover rates, temporary and seasonal employment, long technology refresh cycles, and high geographic dispersion with retail stores, warehouses, customer contact centers and customer service points. This makes the implementation of technology an imperative for the retailer which, in turn, is seen to result in several different applications like Point of Sale, Customer Relation Management, Employee Relation Management, Enterprise Resource Management, Sales Management, Supplier Management, Product Management, and Finance Management to be deployed in a retail organization.

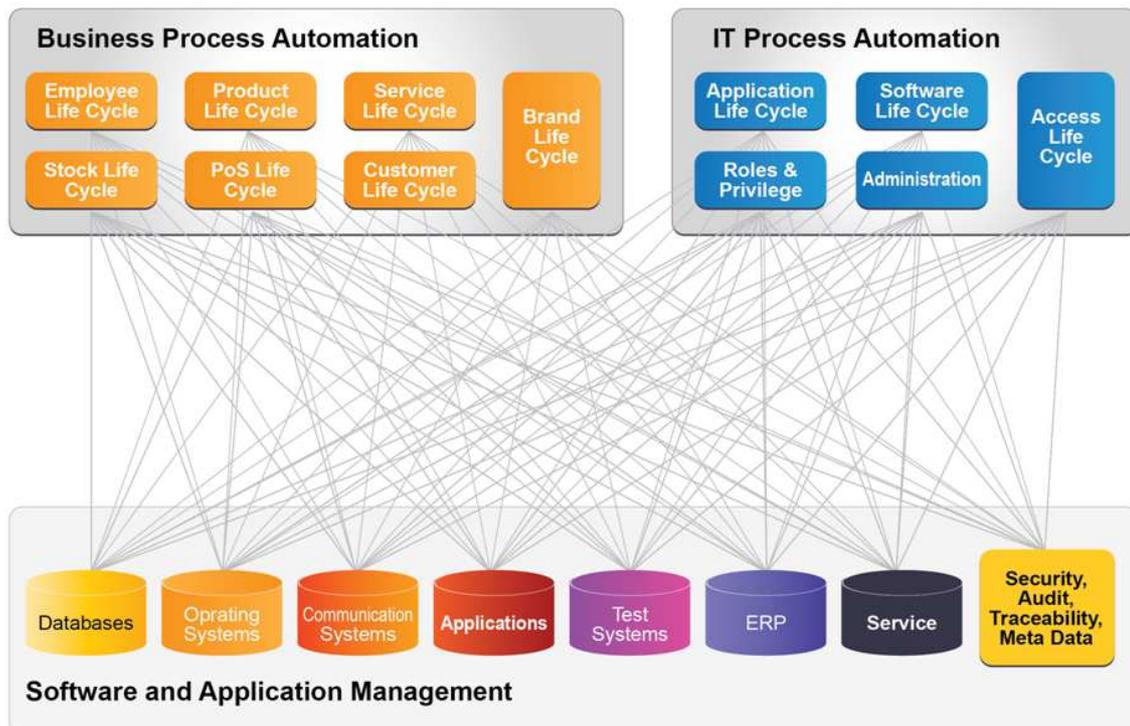
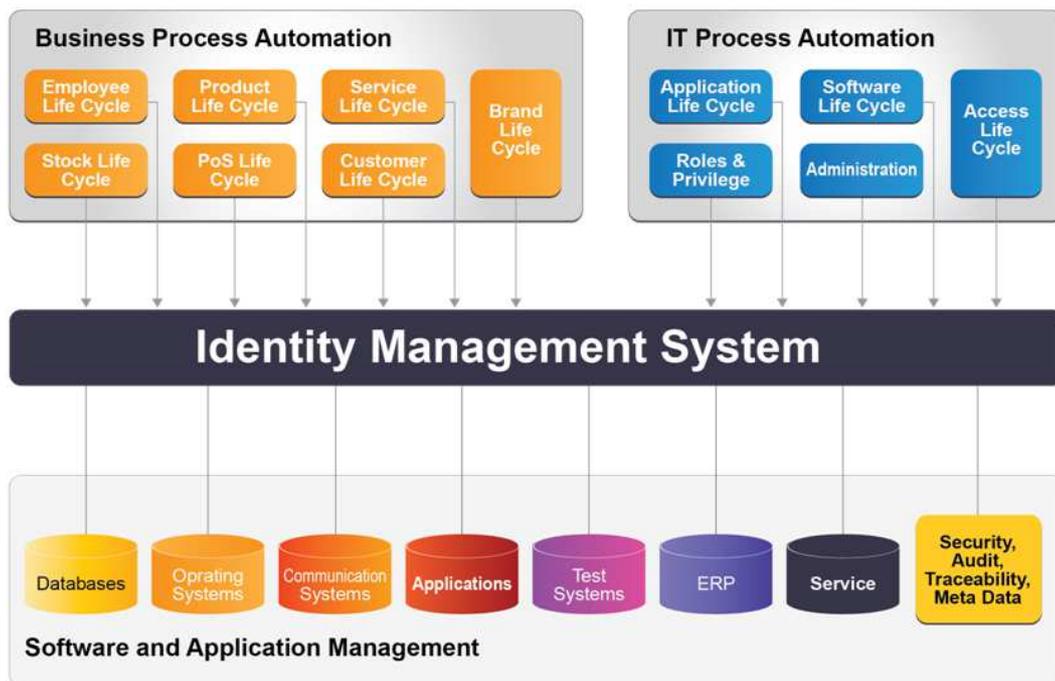


Figure 6. Complexity of retail IT management

Business processes are sought to be automated with increased IT deployment with employees playing multiple roles. This role based interaction becomes critical for the organization and the employee equally. Based on the identity of the person, the roles and the associated privileges of a person to conduct and facilitate transactions is determined. The real identity and the electronic proxy requirements can hardly be understated in this context. This is depicted in the following figure 6. Numerous systems in the organization need to interact with each other through human interfaces. Each human interface represents a challenge in identifying the person accessing and

authorizing the transactions. Thus at every step identification and proper authorization of the human accessing the systems becomes critical. A conventional IT System results in silos of such applications to be accessed with little or no integration of identities across the applications.

The role of identity management thus comes to the fore in the organizational IT systems and processes. An autonomous identity management layer across the IT domain serves to streamline the role definition, access management and thereby the privileges management for the associated roles. See Figure 7.



*Figure 7. Role of identity management in retail IT systems*

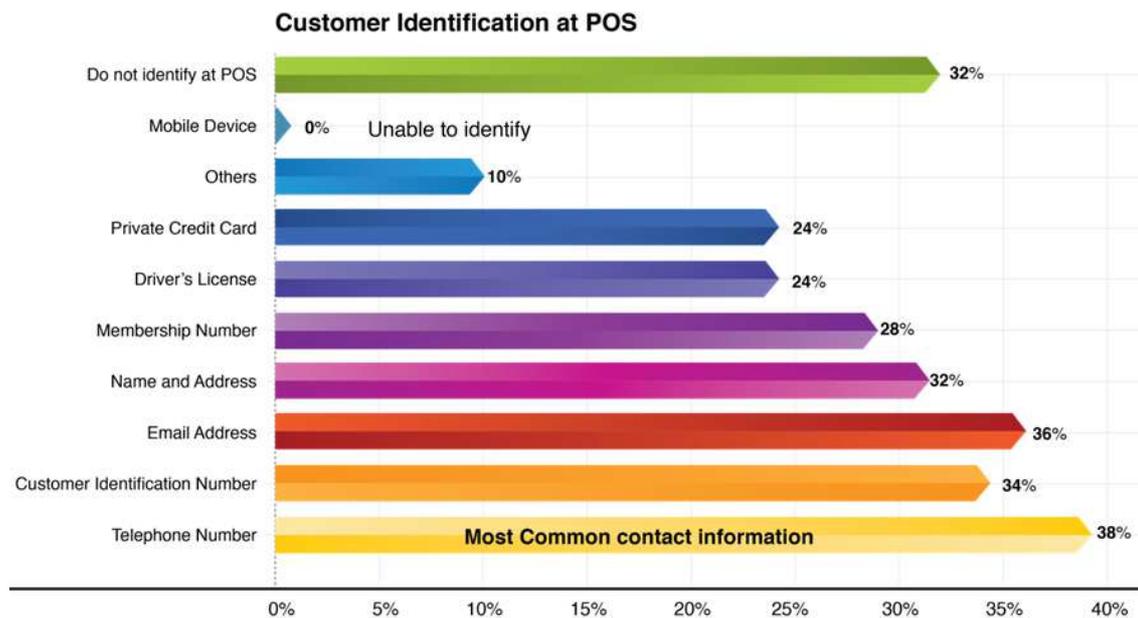
In the absence of this autonomous ID management, the business systems would run the risk of operational inefficiencies and opaqueness that translates to potential loss of income due to mismanagement and frauds. The human identities need to be transformed to electronic identities that serve as the proxy for the real identity ensuring that the identity conundrum is resolved to a large extent by the strong proxy in the digital environment. Further the concept of “One Person- One ID” is well implemented ensuring clear audit trail for the transactions in the digital world.

With identification, comes the access management. How does an identified entity gain access to a system? An irrefutable proof identity and proof of presence is required to gain access. This implies that by simply providing an identifier (for example a name) is insufficient to prove the presence of the identity. Thus, credentials as a set of metadata for identification are required. These credentials range from passwords to PINs to biometrics to digital certificates. With the additional of each parameter, access is

made more difficult with resulting increase in security of the system. This contributes to the complexity of the identity management systems and with that the associated costs.

The recent Retail Fraud Study 2014 (Martec Retail Fraud Survey 2013-14), estimates 10% increase in losses on fraud contributing to £3.4Billion in losses to UK retailers and 22% of this is estimated to be caused by internal staff. This can be attributed to weak identity management and thereby fraud prevention mechanisms.

In a similar vein, according to a survey released in January 2012 by Boston Retail Partners (BRP), 31% of North American retailers remain unable to identify their customers at the point of sale (POS). This survey found that no retailer could identify customers connecting through mobile devices. As depicted in Figure 8, the most common customer contact information available includes telephone numbers (38%), customer/identification number (34%), email address (34%), name and address (31%), and member/club number (28%).



*Figure 8. Boston Retail Partners survey (2012)*

The retail industry is now grappling with the security needs for the growing crimes related to identity theft straining the already strained profit margins. To shed light on the seriousness of this issue, the next section will provide some statistical elaboration.

### 3. Data Driven Decision Making

From the period of web presence it is now the era of omnipresence for retailers seeking to build deeper relationships with their global customers and their ubiquitous access to information and ability to transact remotely. This relationship is expected to be defined by the increased interaction of the empowered customer driving the supply chain (PwC, Retailing 2020).

This leads to a detailed knowledge of the customer not just in terms of attributes but also in terms of attitudes. This is the key to the next level of retail transformation. One of the major trends that is currently changing the retail landscaping is “personalization” of services and products. Customers increasingly are willing to share their personal information to be better served enabling personalized retail experience across multiple channels. Retailers are seeking to merge the data collection points between the physical and online worlds (Shelly Kohan, 2014). The fact that today’s customer uses multiple channels like mobiles, laptops, kiosks to transact, the data collection becomes enormous providing deeper insight to the customer’s attitudes. The data sets then could be unstructured in nature collected from different sources at different points in time. A structured analysis could represent the nature of the customer thus enabling the retailer to reach the customer

when a purchase decision is being made and help the decision to be made. Furthermore, this analysis helps understand the customer’s nature and facilitates the retailer in providing a personalized and enhanced buying experience thereby strengthening the customer- retailer relationship.

This the clear direction in which retailers would relate to their customers. As per the Jones Lang Lasalle report of 2013, the multi-channel retailers would evolve to omni-channel retail weaving their way through the labyrinth of web and mobile access layers (see Figure 9).

This implies a paradigm shift in the retail strategy. Retailers of today are multi-brand, multi franchise entities. While brands drive the required visibility, the retailer drives the customer touch points. To ensure that there is a seamless personalized experience of interaction for the customer all the channels of interaction need to be integrated. From the current structure of independently managed channels, the transformation is towards an integration of all business and technical processes with an integrated brand strategy. This is the essence of Big Data Analytics working to serve In-store Analytics.

The JLL report expects ‘click and collect’ to become more significant in developed markets as online retail expands and consumers increasingly opt for convenience of collection (Jones Lang Salle, 2013). Thus a service request placed or a transaction conducted remotely in anonymity is served and fulfilled in physical presence of the customer. The knowledge and the identity of the customer then come to the fore! This is the transformation that the retailers are undergoing- collection and analysis of data into a knowledge structure for enhanced customer service.

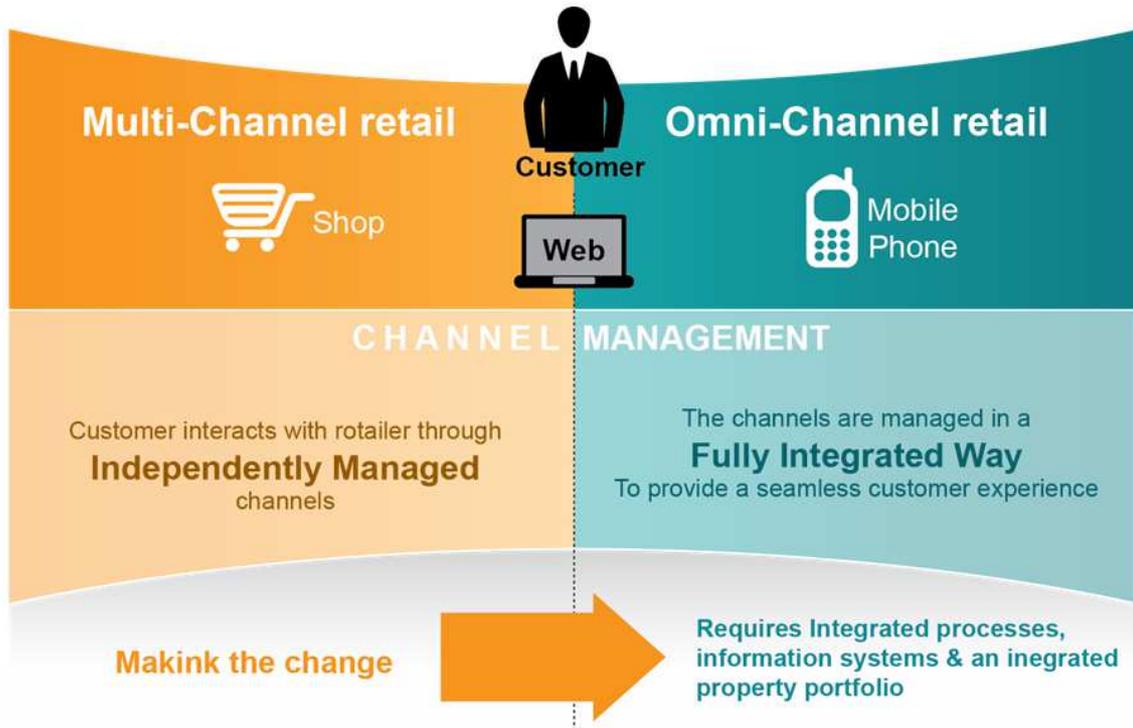


Figure 9. The omni channel retail

#### 4. Financial Fraud: The Old-New Story of Identity Theft

A consequence of structure is chaos. With data comes breach! In a study published by LexisNexis (2013), data breaches continued to play a significant role in identity fraud, resulting in greater liability for merchants as the percentages of incidents increased from 12% in 2012 to 17% in 2013. The online-channel frauds are reported to have increased by 36%, costing merchants \$3.10 for each dollar of fraud losses.

M-commerce retailers have incurred the greatest fraud losses as a percent of revenue among all merchant segments (0.75% in 2013) even as more merchants are seeing an increase in revenue. The m-commerce revenue has been reported to have risen from 14% in 2012 to 19% in 2013 and continues to show promise to grow further. The increased revenues are complemented by increased fraud.

The mobility factor seems to contribute more to the fraud. This is depicted in Figure 10, from the Javelin report which suggests that among all online users tablet owners have been the most susceptible to fraud; 80% more likely than all other consumers to become fraud victims.

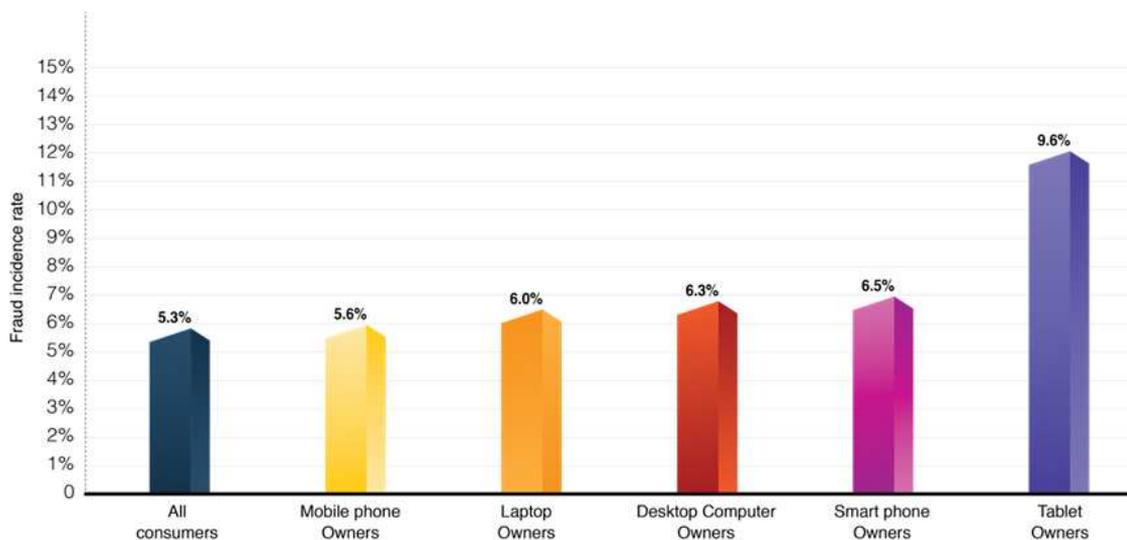


Figure 10. Fraud incidence by ownership of technology products. Source: (LexisNexis, 2013)

Retailers' measures to contain and overcome operational inefficiencies have reduced the losses in lost and stolen merchandise. However, there is an overall increase in the frauds. It appears thus, identity theft (involving fraudulent card, check, or mobile payments), and, to a lesser extent, fraudulent requests for return and refund, are likely driving the increase in the proportion of physical channel fraudulent transactions in all fraud. Proper authentication at the POS would help merchants avoid the charge-backs and

fees to financial institutions that may result from identity fraud.

Going further on these reports, the merchant community is in general agreement with the existence of fraud owing to identity theft. However, the majority have considered this as an accepted and inevitable risk without containment (figure 11).

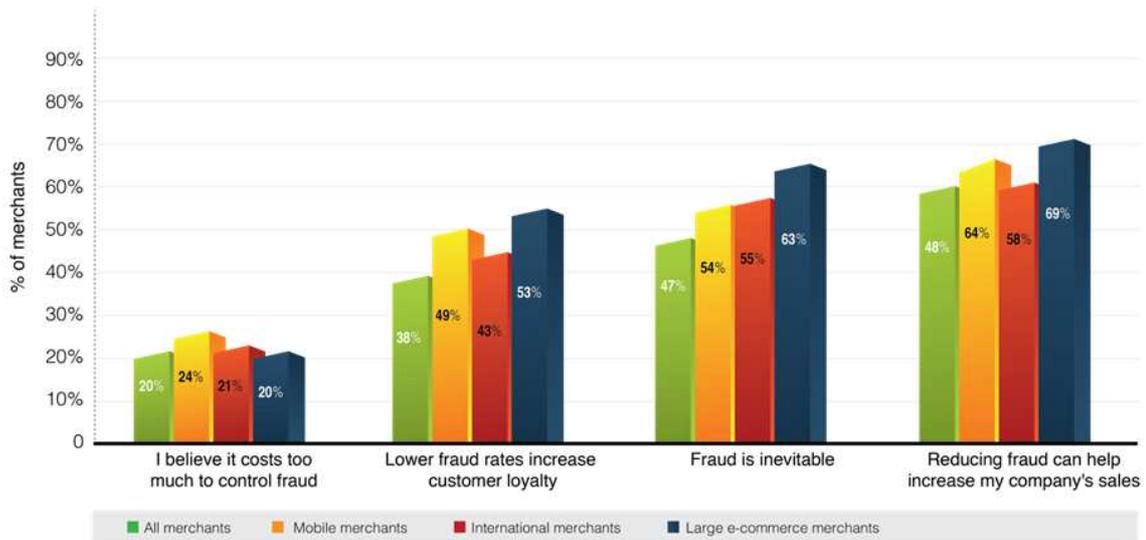


Figure 11. Merchants' attitude towards e-commerce fraud. Source: LexisNexis (2013)

The message to note here is that, while the community accepts risks due to identity frauds as inevitable and might even consider them for defining their risk appetite, the loss of opportunity due to perceived threats is huge. Customers

who find that there are little or no efforts in thwarting identity theft from the retailers are less likely to do business with them (Al-Khour, 2014).

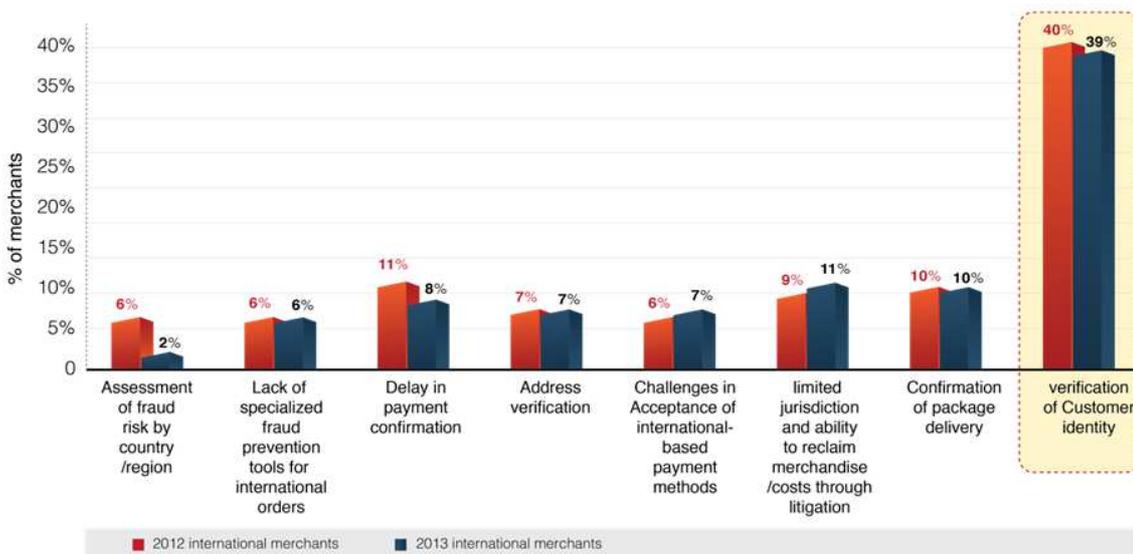


Figure 12. Top challenges in controlling international fraud (2012-2013) Source: LexisNexis (2013)

As depicted in Figure 12, the biggest challenge to address is in the verification of customers' identities. In Javelin Survey reported by Lexis Nexis, thirty-nine percent

of merchants consider verifying customers' identity to be the most challenging aspect of selling to consumers at the point of sale and remotely.

A new approach to securely managing online identity is essential—namely, a system that uses an interoperable, vendor-neutral framework and gives end users more direct control over their digital identity (Ibid).

To unlock the full value potential, the retail industry needs to embrace a new paradigm for digital identity applications. According to a report by the Boston Consulting Group, the value created through digital identities could reach 1 trillion euros in Europe by 2020 (Liberty Global, 2012). Two-thirds of digital identity’s total value potential stands to be lost if stakeholders fail to establish a trusted flow of personal data (Ibid).

Faced with such business opportunities, many an identity management system has been propagated. Governments have initiated national identity management infrastructure development programs to leverage strong identity credentials in electronic environments for both public and private sectors use. Identity-As-A-Service is on the ramp up. The next section provides an overview of one of the most renowned and ambitious initiatives in the world that aims to provide individuals, businesses, and government organizations with secure and reliable management of digital identity and personal data.

### 5. Government-Owned Digital Identity Management to Support e-Economy Development

The government of the UAE initiated a national identity management infrastructure development program in 2003. All citizens and legal residents were enrolled in the National Population Register by 2012. The enrollment process consisted of capturing the biometrics of all those above the ages of 15, mainly fingerprints and facial recognition supplemented now by iris. These biometric parameters in electronic templates along with the biographic data and a pair of digital certificates issued by the PKI constituted the digital profile of an individual. This digital profile is then issued along with a permanent number and packaged into a secure smart card.

The national identity management infrastructure in the UAE is based on a Public Key Infrastructure (PKI), which is a cryptographic technique that enables users to securely communicate on an insecure public network and reliably verify the identity of a user via digital signatures (Carlisle & Steve, 2003).

As depicted in Figure 13, the UAE smart card provides advanced user authentication capabilities more securely than standard usernames and passwords, in addition to electronic signature capabilities to sign documents to ensure non-repudiation. The card also enables establishing a person’s identity on-site or remotely, allowing secure and trusted transactions. The multi-factor authentication with match-on-card and match-off-card features facilitates validation, verification, and authentication of an identity.



Figure 13. UAE national ID card advanced capabilities

An online national validation gateway provides remote card holder authentication, verification, and validation services to public and private sector organizations. The strong authentication services offer the widest array of authentication choices to meet the trust levels of public and

private organizations. In principle, the use of the national gateway provides more secure, online, real-time validation, verification, and authentication of identity credentials (i.e., card, transaction, and holder genuineness; figure 14).

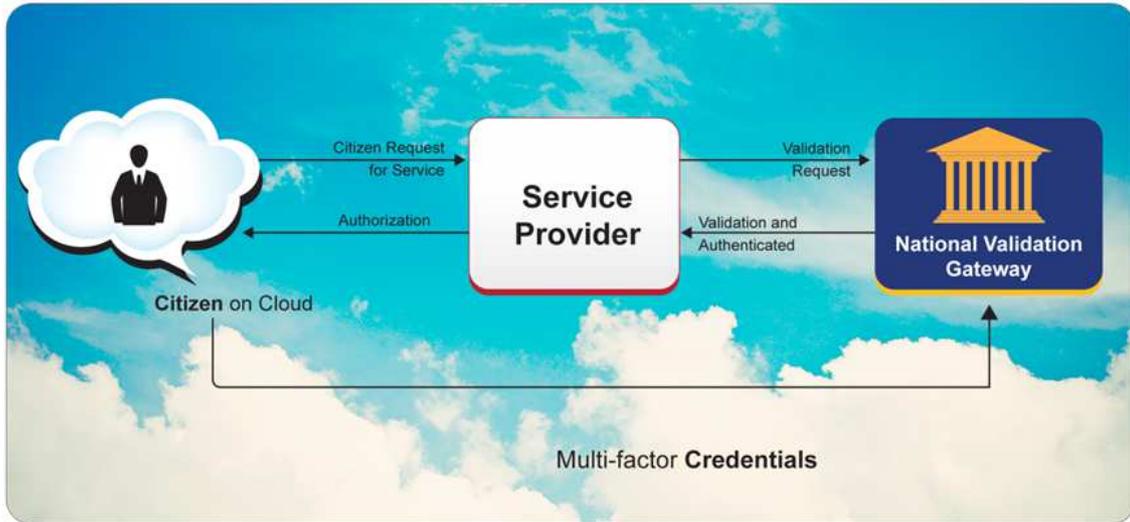


Figure 14. UAE online validation gateway scenario

The national validation gateway ensures that not only are identification processes made seamless to enhance service delivery but they also vastly improve business processes, leading to strong bottom lines. Prevention of identity theft

is a direct result of the strong electronic identity and digital credentials and estimated to benefit the nation in trillion dirhams per annum of digital economy contribution to the nation. (See figure 15)

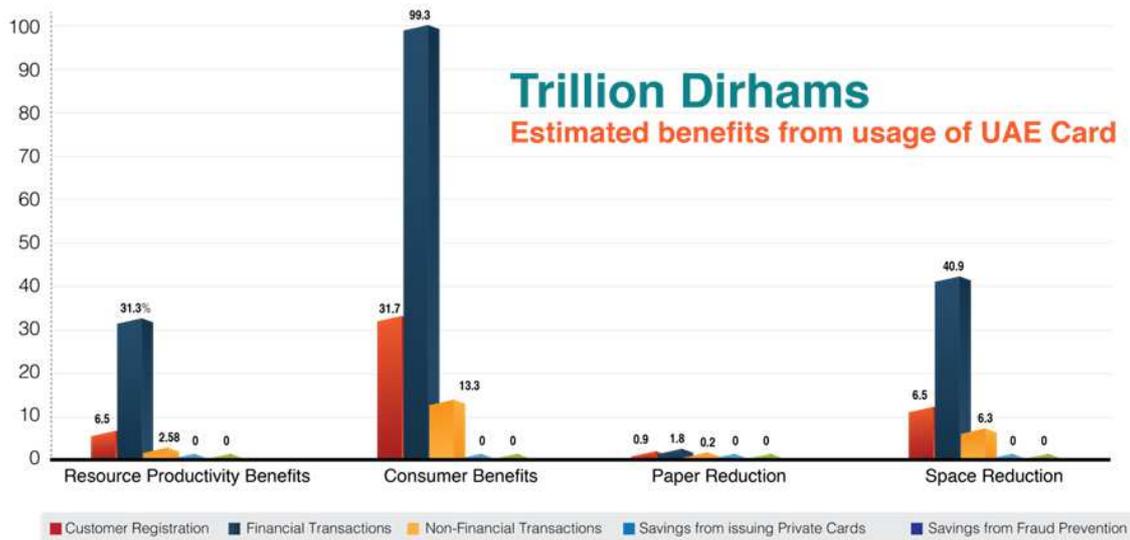


Figure 15. Identity management infrastructure potential benefits to UAE economy

This trust enablement results in the ability to collect authentic data without compromising the personal information or misuse of personal data. Personal data is masked in the digital proxy enabling collection of authentic data from the vast electronic channels yet providing meaningful information to subscribing retailers. Furthermore, the unique identity and the identity infrastructure accorded by the Government obviates the need for retailers and other related organizations to invest in their own identity management infrastructures and enable focus on their customer acquisition and customer retention programs.

The data generated from the Digital ID based transactions would contribute largely to provide an

analytical structure to the unstructured data and enable enhanced personalization services to the customers.

## 6. Concluding Remarks

The retail industry is witnessing exciting and yet challenging times. The advancement in technologies is transforming the retail landscape entire from a brick and mortar model to the click-and-collect models. Customer experience and personalization are the key drivers of the technology adoption by the retailers. Apart from improved process automation and user enablement driving operational efficiencies, identity management is seen to provide a huge customer engagement with personalization,

enhanced delivery. Personal data-driven merchandising is seen to provide the next level of customer engagement. A sale is no longer a discrete event but a sequence of events spread over need generation to after sale resulting in repeat prolonged engagements. Government-owned identity management infrastructures are essential building blocks for the Internet to operate as a platform for economic development and social progress providing authentic data for enabling validated analysis.

Solid identity management and strong credentialing practices enable the verification of identities that are critical for the retail industry. In fact, identity management is the main vehicle for building sustainable economies. As a key instrument for establishing the identity, the UAE national identity card system provides a strong framework for increasing the governance and providing internal controls... The outcome is the ability to have self-service interfaces that enable a reduction in costs for the services using automation for policy enforcement. This ability, backed by a centralized audit trail, provides a strong backbone for businesses to be carried out innovatively. This not only reduces IT operational costs but also provides the much-touted user efficiency and productivity.

Different countries have taken different approaches. The approach followed by the government of the UAE is based on its leadership vision that governments' involvement is needed to succeed in the digital economy. This is to ensure ready and affordable access, a level playing field, and an open competitive environment that enables everyone to tap the economic benefit of the Internet (BSG, 2013). Governments need to intervene if they want to be winners. They should aim to support and enforce a predictable, minimalist, consistent, and simple legal environment for commerce (Ibid).

## References

- [1] Al-Khouri, A.M. (2011) "An Innovative Approach for e-Government Transformation". *International Journal of Managing Value and Supply Chains*, Vol. 2, No. 1, pp. 22-43.
- [2] Al-Khouri, A.M. (2012a) "PKI in Government Digital Identity Management Systems", *Surviving in the Digital eID World*, *European Journal of ePractice*, No. 4, pp. 4-21.
- [3] Al-Khouri, A.M. (2012b) "Emerging Markets and Digital Economy: Building Trust in the Virtual World", *International Journal of Innovation in the Digital Economy*, Vol. 3, No. 2, pp. 57-69.
- [4] Al-Khouri, A.M. (2012c) "eGovernment Strategies: The Case of the United Arab Emirates", *European Journal of ePractice*, No. 17, pp. 126-150.
- [5] Baird, N. and Raj, W. (2012) *Customer-Centricity Drives Successful Omni-Channel Retailing: Insights from a webinar presented by Retail Systems Research (RSR) and SAS*. SAS Institute Inc. <http://www.storeconference.ca/sites/default/files/docs/ecobag/SAS.pdf>
- [6] Banday, M.T., Qadri, J.A. (2007). "Phishing - A Growing Threat to E-Commerce," *The Business Review*, ISSN: 0972-8384, 12(2), pp. 76-83.
- [7] Brust, A. (2013) *Five Big Data Trends Revolutionizing Retail*.<http://www.zdnet.com/five-big-data-trends-revolutionizing-retail-7000019510/>
- [8] Burt, M., Davison, J., Hetu, R. and Welch, K. (2013) *Predicts 2014: Digitalization in Retail Means M-Commerce Grows, E-Commerce Slows, Personalization Misfires and 3D Printing Transforms*. Gartner.<https://www.gartner.com/doc/2625216>
- [9] Cantor, R. (2013) *Identity Theft*.Destiny Image.
- [10] Carlisle, A. & Steve, L. (2003) *Understanding PKI: concepts, standards, and deployment considerations*. Addison-Wesley Professional. pp. 11–15.
- [11] Costa, L. and Fernandes, F. () *Successful Retail Innovation in Emerging Markets: Latin American Companies Translate Smart Ideas Into Profitable Businesses*. Booz & Company. <http://www.booz.com/media/file/SuccessfulRetailInnovationEmergingMarkets.pdf>
- [12] Craig, J., Kerben, J., King, J.D., Lanoue, E.T., Lissy, K., Sailer, C., Schwomeyer, K., Thomas, J. and Yellen, B. (2013)*The Current and Future Landscape of Identity Theft*.<http://blog.thomsonreuters.com/wp-content/uploads/2013/11/IDT-WhitePaper-final-20131030-2.pdf>
- [13] Davenport, T.H. and Dyché, j. (2013) *Big Data in Big Companies*. SAS Institute Inc. [http://www.sas.com/content/dam/SAS/it\\_it/doc/whitepaper/2/big-data-big-companies-2282455.pdf](http://www.sas.com/content/dam/SAS/it_it/doc/whitepaper/2/big-data-big-companies-2282455.pdf)
- [14] Dean, D., Digrande, S., Field, D., Lundmark, A., O'Day, J., Pineda, J. and Zwillenberg, P. (2012) *The Connected World: The \$4.2 Trillion Opportunity - The Internet Economy in the G-20*. The Boston Consulting Group.[https://publicaffairs.linx.net/news/wp-content/uploads/2012/03/bcg\\_4trillion\\_opportunity.pdf](https://publicaffairs.linx.net/news/wp-content/uploads/2012/03/bcg_4trillion_opportunity.pdf)
- [15] Deloitte (2013) *Global Powers of Retailing 2013Retail Beyond*.Deloitte.[http://www.deloitte.com/assets/Dcom-Australia/Local%20Assets/Documents/Industries/Consumer%20business/Deloitte\\_Global\\_Powers\\_of\\_Retail\\_2013.pdf](http://www.deloitte.com/assets/Dcom-Australia/Local%20Assets/Documents/Industries/Consumer%20business/Deloitte_Global_Powers_of_Retail_2013.pdf)
- [16] Graham M. (2012). "Big data and the end of theory?".*The Guardian*.<http://www.theguardian.com/news/datablog/2012/mar/09/big-data-theory>
- [17] Gupta, Yuvika, *When BI Meets CRM: An Emerging Concept in Retail Industry* (July 16, 2013). Publishing India Group, Forthcoming. Available at SSRN: <http://ssrn.com/abstract=2294468>
- [18] ITAC (2013) *Research and Statistics.Identity Theft Assistance Center*.<http://www.identitytheftassistance.org/pageview.php?cateid=47>
- [19] Javelin Strategy and Research (2013) *How Consumers can Protect against Identity Fraudsters in 2013*. [https://www.javelinstrategy.com/uploads/web\\_brochure/1303.R\\_2013IdentityFraudConsumerReport.pdf](https://www.javelinstrategy.com/uploads/web_brochure/1303.R_2013IdentityFraudConsumerReport.pdf)

- [20] Kaufman-Scarborough, C. and Forsythe, S. (2009) Current issues in retailing: Relationships and emerging opportunities Introduction to the special issue from the American Collegiate Retailing Association 2005 and 2006 conferences. *Journal of Business Research*. 62 (2009) 517–520
- [21] La Vigne, N.G., Hetrick, S.S. and Palmer, T. (2008) The Urban Institute. [http://www.urban.org/UploadedPDF/411758\\_crime\\_trends.pdf](http://www.urban.org/UploadedPDF/411758_crime_trends.pdf)
- [22] Lachut, S. (2013) The Future of Retail 2014. A PSFK Report. PSFK LABS. <http://www.psfk.com/publishing/future-of-retail-2014>
- [23] LaValle, S., Lesser, E., Shockley, R., Hopkins, M.S. and Kruschwitz, N. (2011) Big Data, Analytics and the Path from Insights to Value. *MIT Sloan Management Review*. Vol. 52, No. 2. Pp. 21-31. [http://www.ibm.com/smarterplanet/global/files/in\\_idea\\_smarter\\_computing\\_to\\_big\\_data-analytics\\_and\\_path\\_from\\_insights-to-value.pdf](http://www.ibm.com/smarterplanet/global/files/in_idea_smarter_computing_to_big_data-analytics_and_path_from_insights-to-value.pdf)
- [24] Levis, R. (2013) The Impact of the Internet on Retail Property. Aviva Investors. [http://www.avivainvestors.co.uk/pension\\_schemes/internet/groups/internet/documents/salessupportmaterial/pdf\\_029761.pdf](http://www.avivainvestors.co.uk/pension_schemes/internet/groups/internet/documents/salessupportmaterial/pdf_029761.pdf)
- [25] LexisNexis (2013) True Cost of Fraud Study: Merchants Struggle Against an Onslaught of High-Cost Identity Fraud and Online Fraud. <http://www.lexisnexis.com/risk/downloads/assets/true-cost-fraud-2013.pdf>
- [26] Liberty Global (2012) THE VALUE OF OUR DIGITAL IDENTITY. Boston Consulting Group. <http://www.libertyglobal.com/PDF/public-policy/The-Value-of-Our-Digital-Identity.pdf>
- [27] Liberty Global (2012) THE VALUE OF OUR DIGITAL IDENTITY. Boston Consulting Group. <http://www.libertyglobal.com/PDF/public-policy/The-Value-of-Our-Digital-Identity.pdf>
- [28] Microsoft (2012) Online Identity Theft: Changing the Game – Protecting Personal Information on the Internet. Microsoft Corp. USA. <http://www.telecomasia.net/content/online-identity-theft-changing-game>
- [29] Miriam Lips, M. (2010) Rethinking citizen - government relationships in the age of digital identity: Insights from research. *Journal of Information Polity*. Volume 15 Issue 4, December 2010. Pages 273-289
- [30] OECD (2011), “National Strategies and Policies for Digital Identity Management in OECD Countries”, OECD Digital Economy Papers, No. 177, OECD Publishing. <http://dx.doi.org/10.1787/5kgdzvn5rfs2-en>
- [31] Ohm, P. (2012) "Don't Build a Database of Ruin". *Harvard Business Review*. <http://blogs.hbr.org/2012/08/dont-build-a-database-of-ruin/>
- [32] Pearson, I. (2010) Business redefined. Ernst & Young. [http://www.ey.com/Publication/vwLUAssets/BusinessRedefined-FINAL/\\$FILE/BusinessRedefined-FINAL.pdf](http://www.ey.com/Publication/vwLUAssets/BusinessRedefined-FINAL/$FILE/BusinessRedefined-FINAL.pdf)
- [33] Shah, S., Horne, A. and Capellá, J. (2012) Good Data Won't Guarantee Good Decisions. *Harvard Business Review*. <http://hbr.org/2012/04/good-data-wont-guarantee-good-decisions/ar/1>
- [34] Shaw, C. (2007) The DNA of Customer Experience: How Emotions Drive Value.
- [35] Smith, R.G. (2013) Does economic crime really matter in the world of today? Public and business perceptions in Australia. *Cambridge Symposium on Economic Crime*. [http://www.aic.gov.au/media\\_library/conferences/other/smith\\_russell/2013-09-cambridge.pdf](http://www.aic.gov.au/media_library/conferences/other/smith_russell/2013-09-cambridge.pdf)
- [36] Snijders, C., Matzat, U., & Reips, U.-D. (2012). 'Big Data': Big gaps of knowledge in the field of Internet. *International Journal of Internet Science*, 7, 1-5. [http://www.ijis.net/ijis7\\_1/ijis7\\_1\\_editorial.html](http://www.ijis.net/ijis7_1/ijis7_1_editorial.html)
- [37] WalkerSands (2013) Reinventing Retail: What Businesses Need to Know for 2014. <http://www.walkersands.com/pdf/Walker-Sands-Future-of-Retail-Whitepaper.pdf>
- [38] Welch, K. (2013) Excellent Execution of Customer Basics Is Key to Building Loyalty. *Gartner*. <https://www.gartner.com/doc/2631834>
- [39] PwC/ Kantar. (2012) Retailing 2020: Winning in a Polarized World.
- [40] Jones Lang Salle, 2013: E-commerce boom triggers transformation in retail logistics.
- [41] Shelly Kohan. (2014), The 5 most fascinating retail trends in 2014: The Transformation of Retail. <http://retailnext.net/blog/the-5-most-fascinating-retail-trends-in-2014-the-transformation-of-retail/>