HARNESSING IOT ADVANTAGES IN THE DISRUPTIVE ERA: UAE RETAIL INDUSTRY

Shahzia Khan, Amity University, Dubai
Muhammad Usman Tariq, Abu Dhabi School of Management

ABSTRACT

In the dynamic and competitive retail environment, retailer constantly quest to find out ways of understand the customers need and formulate strategies to transcend their rising expectations. Understanding the digital savvy consumers is becoming difficult more than ever before. Moreover, the retailers face the challenges posed by the changing retail landscape and operational complexities. However, in the disruptive era several technologies are emerging that provide smart business solution to the organizations. Among the popular digital innovation, Internet of Things (IoT) has caught the attention of several researchers and marketers. Marketers, retailers in particular, optimize the use of IoT to achieve profitability through competitive advantage. This study aims at finding answer to two fundamental research questions (i) How do retailers harness the benefits of IoT to enhance their business efficiencies and (ii) What are the challenges associated with IoT implementation. To unravel the answer to these research questions, a qualitative study was conducted where data were gathered through the informal discussions thirty-eight leading retailers of the United Arab Emirates (UAE). This study sheds light on the benefits of IoT application in UAE Retail industry and discusses a few challenges associated with its implementation.

Keywords: Digital Innovation, Internet of Things (IoT), UAE Retail, Retail Experience

INTRODUCTION

Technological disruption has altered the both the way consumers behave and the way organizations operate. Digital technology plays pivotal role in consumer's everyday life influencing pre purchase, purchase and post purchase decisions. Marketers have to create and deliver across all the stages of consumer decision making process Sweeney & Soutar (2001); Woodruff (1997). It was reported that about 84% of the shoppers rely on digital devices for shopping related requirement during and before their visit to stores Lobaugh, et al., (2014). In response to this change, businesses are digitizing their processes to better cater to customers' requirement. Marketers are increasing the usage of Big Data to develop deeper insight to consumer behavior. The evolution of Big data has interested and profoundly impacted the marketers, retailers, policy makers academic researchers, retail educators and several other stakeholders Dekimp (2018). It is often stated "one of the hottest markets for big data analytics" is retailing Ingram Micro 6 (2018).

In the light of the growing digitization, key policy makers have started harnessing the benefits of Internet of Things (IoT) to redefine customer experience, immensely enhance

retail ecosystem and achieve competitive advantage. With internet and mobile technologies and devices becoming the part and parcel of our everyday lives, Santucci (2010) bolstered that "IoT has the potential to change the world, just as the Internet did. May be even more so". One such sector that it disrupted by IoT is the retail sector. As the customer's expectations heighted and retail landscape changed, retailers grappled with ways of alluring the customers. Consumers no longer use single retail channel, retailers and companies endeavor to engage them on multiple platforms Retail & Consumer Insights (2015). IoT, a system of interrelated devices, captures copious amount of consumer data that provides a deeper understanding of consumer behavior, thus aiding in improvising retail strategies. It also enables to effectively integrate physical retail with the digital channels thereby increasing real –time customer interaction and rendering seamless Omni channel retail experience.

United Arab Emirates (UAE), often known as 'shopper's paradise', is one of the most popular, advanced and dynamic retail hub in the world. As per Kearney's (2019), national retail sales were recorded to be $78 billions Kearney (2019). In UAE, Retail IoT spending was $23.4 million in 2013 that later rose to $74 in 2018 Statista (2020). With shoppers in Middle East extensively using devices like tablets, smartphones, desktops for their e-commerce requirement, IoT is believed to enrich user engagement in UAE retail Industry (Sadaqat, 2017). UAE's IoT market is propelled by adoption of IoT solution across organizations as it increases business efficiencies, reduces operational cost and enhances productivity, it is further expected to grow significantly by 2025 forecast period Tech Sci (2020).

This paper is organized in different sections. It commences with introduction followed by the literature review to conceptualize the topic under study. Further the research methodology is discussed. The finding and discussion section sheds light on fundamental issues explored in the informal discussions with the UAE based retailers. The paper is concluded with a concise summary and recommendations.

LITERATURE REVIEW

Digital advancement combined with rapidly evolving behavior of consumer has changed the retail landscape dramatically. The need to integrate power of big data and retail channels is the fundamental criteria to achieve competiveness. IoT, Machine learning (ML), Artificial Intelligence (AI), Augmented/Virtual Reality (AR/VR), Virtual Assistants (VA), robots, cashless payments are dominating the retail industry Deloitte (2016). Technological advancement has transformed the facets of retail exchanges, retail offering, retail eco system and the key players of retail (Hagberg, et al., 2016; Inman & Hristina, 2017) in their study emphasized that technology implementation enhances the profitability of the business as it is advantageous to both consumers and businesses. for optimizing customer experience. But to deliver personalized customer experience, it is imperative for business organizations to integrate AI with human intervention (Khan & Iqbal, 2020). Marketers are engaging in their own retailing more than ever before by focusing on better brand management, providing comprehensive product information to consumers and by staying abreast with retailing trends and practices (Osegowitsch & Madhok, 2003). A However, amidst the rapidly changing landscape and changing shopper behavior, achieving customer loyalty becomes very challenging (Monferrer, et al., 2019). Min their study on retail banking found that there is strong relationship between customer engagement and customer loyalty.

In the recent times, social media and digital communication channels have emerged as vital component of consumer' shopping experience in the stores as well as outside the store (Pantano & Gandini, 2018). Consumers demand seamless shopping experience across various retail channels, great shopping entertainment also known as 'retailtainment', quick comparison of prices, in-store access to product information Research Gate (2014). Retailers are constantly embracing latest techniques to create captivating in-store experiences for the shoppers (Backstrom & Johansso, 2006). However, as the consumers blur the line between brick and mortar and digital stores, retailers grapple to cater to customer expectations from supply chain, order fulfillment and in-store experience (Samsung white Paper, 2017). Besides, a great shopping experience it is critical for retailers to emotionally connect with the consumers. Sachdeva & Goel (2015) in their study strongly advocated that marketers must engage consumers not just behaviorally but mentally as well, hence, while interaction with the brand is enhanced on social media and in store, it should also be emotionally appealing. To combat with the growing challenges of modern retail comprehend the changing consumer preferences and efficiently serve the customers, retailers optimize the use of retail smart devices Gaur & Singh, et al. (2017). Retailers can exploit big data, gathered through smart devices, to predict shoppers' behavior and design lucrative and competitive offers that will enhance store's profitability (Grewal et al., 2017).

IoT, as defined by International Telecommunication Union (ITU), is "the network of physical objects - devices, vehicles, buildings and other items - embedded with electronics, software, sensors, and network connectivity that enables these objects to collect and exchange data" (International Telecommunication Union, 2015). Numerous researchers and scholars have identified a wide range of IoT applications in domestic (smart living), societal (smart cities, smart marketing), environmental, technological, emergency and critical situations (Matta et al., 2017) Factually, there has been a strong association between IoT and retail sector that is indicative in previous research focused on the use of auto IDs (e.g. RFID tags) in retail and supply chain management (Schneider & Kroner (2008); Schuster, Allen & Brock (2007)). A report published by Infso D.4 Networked Enterprise (2020) stated that "the first large scale application of the Internet of Things technologies, will be to replace the bar code in retail".

Key potential areas in physical retail environment that can tremendously benefit from IoT application are store entry touch points, customer interaction, smarter merchandise, abundant data collection and rapid mobile payments. IoT also facilitates the retailers to use real- time analytics enabling them to adjust their pricing system as per the hourly demand, prevailing stock and competition Pittman (2013). Hugo Boss tracked customers' moment in the store through heat sensors and the findings enabled them to place premium product in the high-traffic area. Barthel & Smith (2014) in the study suggest that IoT application renders advantages to both the consumers and the retailers. While it adds value to shopping experience for the consumers who can enjoy the benefits of customization, curation, improved interactions, it enables the retailers to improve customer relationships, develop through understanding of customer requirements, enhance supply chain management and integrate various retail channels. IoT also enables store layout optimization that is expected to increase productivity by 5 percent Manyika, et al., (2011).

IoT also enables the retailers to reckon the interest of consumers towards product that are in-store. In one of their studies (Parada et al., 2015). Rattempted to measure consumers interest in the product by computing user-object interaction through Radio Frequency

Identification (RFID). Customer engagement is highly essential for brands. According to (Ramaswamy & Ozcan 2018; Bhattacharyya et al., 2020) the interactive platform created through IoT technologies makes it possible for retailers to engage with individual customers effectively. To further amplify customer experience retailers, use beacon technology, integrate supply chain operation and streamline operations across channels Gregory Jonathan (2015). However, IoT application is susceptible to privacy issues and maintaining the security of huge amount of consumer data gathered is very challenging (Eddy, 2015). What further fuels the challenges is difficulty in manage copious amount of consumer data (Manyika et al., 2011). Due to the rising issues, IoT acceptance depends on the protection of the consumer privacy (Lee & Lee, 2015).

RESEARCH METHODOLOGY

Research Purpose and Questions

The purpose of this research is to familiarize the readers with the IoT and its related use in retail industry. It also attempts at providing an insight into IoT application in dynamic retail environment of UAE. This descriptive study was conducted to explore answer to two fundamental research questions-
RQ 1. What are the key challenges associated with today's Retail?
RQ 2. How does IoT application enhance the retail business profitability?
RQ 3. What are the risks associated with IoT application?
Hence, the research was conducted to meet the following objectives:
- To familiarize with the concept of IoT and its application in business world
- To explore the challenges faced by retailers in competitive landscape.
- To develop insight into IoT application in UAE retail industry to achieve competitive advantage.
- To highlight the challenges associated with the application of IoT

Research Approach and Data Collection

The study employs a qualitative research method focused on thematic content analysis of the responses of the participants. This methodology was adopted because it focuses on experiences of individual (Faeth & Kittler, 2017) and sheds light on individual perspective Guttormsen (2016). Data for the study was gathered both from primary and secondary sources. Among the secondary source of data were the business reports, news articles and research papers. The data generated through these sources helped to develop a deeper understanding of the topic under study. Primary data was gathered through informal discussions and unstructured interviews with the leading retailers, policy makers and retail managers of both local and international brands operating in UAE, particularly from fashion apparel, electronics, hypermarket, leading furniture and home décor. Convenience sampling techniques was employed for this study. 50 leading retailers in the UAE market were approached to participate in this study but only 38 companies consented their participation, hence the response rate was 76 per cent. Five primary open-ended questions were asked in informal interviews that were followed by follow-up question, if required. These informal interviews, spanned over for 12 weeks, were transcribed and edited by researchers for further analysis and discussion.

Data Analysis

Data gathered through the informal discussion were analyzed in six phases as advocated by (Braun & Clarke, 2006). At the first phase, data was transcribed, and initial ideas were outlined. This was followed by generating initial codes that were further collated into potential themes. These themes were reviewed and were clearly defined. The result of the analysis was related to the research questions and the literature gathered.

FINDINGS AND DISCUSSION

The study identified ten common themes to answer three research questions on the basis of the responses gathered in the informal discussion and interview. Some of the vital responses are presented in the section provided below:

What is the Key Challenges Associated with Today's Retail?

Theme 1: The physical blind spots in retail was one the biggest challenges of retailers in dynamic retail environment.

All respondents agreed to the fact that the retail landscape is changing rapidly. While there are tremendous opportunities in the industry, but a few blind spots still prevail. It is difficult to understand the changing customer preferences and lack of customer insights can turn out to be catastrophic for the retailers. In light of the same, retailers shared their opinion as follow:

Customer is everything in business. All our retail strategies are customer driven. Our inventory levels and merchandise category are heavily dependent on customers. If we don't understand them thoroughly, our best effort is also a big failure (R17).

Customer is the pivotal point of retail game. They are the purpose of our existence. We need to know exactly what will appeal to our target consumers. Right from the merchandise to store displays, promotions, pricing, store atmospherics. Everything, Literally everything is based on customer's preferences. And imagine these requirements are changing every single day. Despite putting your best foot forward, you may fail miserably if you don't stay updated on customer's expectations (R5).

Though we closely follow our customer's needs, but it's very hard to keep a track of their wants. It changes very frequently and we have customers of all nuance (R22).

Customer insight is critical not just for retail but for any business. Customer is on the driving seat. Our biggest challenge is to get inside their minds. It is impossible to analyze store data in real time to influence shopping decision (R31).

Retailers wanted a solution that can enable them capture and optimize customer data to formulate effective retail strategies. In absence of such data, their job seemed very challenging.

Theme 2: Achieving customer loyalty is becoming tougher

Another challenge that retailers grapple with is achieving customer loyalty in a competitive landscape. All the respondents believed that the customers are flooded with choices and retailers are not just completing with local counterparts but they are competing internationally across channels.

Despite all the efforts we put in our retention strategies, it's is pretty hard to reckon what drives customer loyalty. We have keep differentiating ourselves through customer services and customer engagements (R10).

With variety seeking customers, it is hard to achieve loyalty. Moreover, our competitive arena is widened. It isn't only about physical stores in Dubai or MENA, it about e-commerce, m-commerce and so on that too at a global level (R27).

Loyalty program is not sufficing in today's competitive environment. It's more about rendering a holistic customer experience. You have to be relevant! (R19).

One of the most challenging part is to retain the customers. We need to acknowledge the fact that loyalty can't be achieved with customer experience (CX). And this leads us to bigger question – What drives CX? So obviously we need to look at a larger picture (R38).

In the light of above discussion, it was found that in order to retain customer in business, retailers have to succeed in differentiating themselves through a holistic and competitive retail strategies. Retailers need to focus on customer experience, quality customer services and personalized solution to customer's problem.

Theme 3: Lack of efficient and agile logistics restricts retailers' ability to serve customers.

Discussions with the retailers revealed that an effective logistics and supply chain management determines the retailer's ability to serve the customers. There has a be a strong coordination between these party and prompt deliver should be ensured.

Logistics is the backbone of retail. We need to ensure the prompt delivery of merchandise to the customers as customer expects consistency and convenience across several channels (R1).

In the fast fashion world, we prefer to receive merchandises in 'floor- ready' format. Any sort of delay will sabotage our brand image (R30).

Last mile delivery is becoming a challenge specially for small purchases. We need to focus on last-mile supply network (R14).

Delivery responsiveness is essential to prompt customer order fulfillment. In case of third part seller it is even more difficult (R8).

Retailers heavily depend on these partners for receiving inventories without delay and also to ensure prompt customer order fulfillment.

Theme 4: Maintaining appropriate inventory level is difficult.

One of the biggest challenges of retailers is to maintain appropriate inventory levels in alignment with the customer's demand. Some of the key response generated in this area of discussion are listed below:

In retail one has to definitely reduce the inventory costs. Moreover, we have to ensure that visibility of inventory in each store in real-time and it should be visible to all the stores (R6).

Be it online or in our physical store, we have to ensure appropriate inventory levels. Managing large SKUs quantities is not easy and maintain inventory in Omni channel is difficult (R19).

Low-inventory levels or excess inventory level both are dangerous for us. We have to ensure optimum levels of inventory and trust you me without a proper technology, it can be a nerve-wrecking experience specially for retail format like ours (R25).

Theme 5: Integrating different channels to create omni-channel retail experience.

As the consumers become digitally savvy, they migrated from single retail channel to multiple channels. They now want a seamless omnichannel retail experience. While retailer acknowledge that this renders tremendous opportunities to retailers, but it complicates the data collection in real-time. Synchronizing and establishing consistency across channel becomes difficult to achieve according to most UAE based retailers.

Today's retail is about omnichannel. We have to ensure consistency in our retail strategy. It about digitization of all commerce. While it has its benefits but if not managed well, it can be a very complicated concept to deliver (R13).

One of the major problem is integrating physical stores with online fulfillment operations. And it comes at a cost of operational efficiency (R32).

Pulling together all the expectations across channels to create seamless shopping experience is quite a task. Data become huge problem in this case (R26).

How does IoT Application Enhance the Retail Business Profitability?

Theme 6: IoT facilitates experienced based retail.

All the respondents opined that IoT is revolutionizing retail experience. Data integration through IoT application help them in enriching the store experience not just in physical space but also across various digital channels.

Effectiveness of store layout is highly essential as your store should encourage customers to navigate and browse. Application of IoT- digital kiosks and mobile apps- helps us to gauge that. It saves customer's waiting time as well (R33).

IoT experienced based retail through the implementation of beacons, sensors, video cameras, smart shelves and digital signage provides access to sophisticated data and customer insight. It a life savior for us retailers (R37).

Retail is all about experience today. IoT has tremendous potential to ensure immersive customer engagement on everyday basis. It provides convenience and augments shopping experience (R7).

The retailers were in agreement that 'Experience is the key' and their responses are reflective of the role of IoT application in creating a world class shopping experience for their shoppers.

Theme 7: IoT helps in reducing Inventory cost. Managing right inventory was discussed as one the major retail challenges. However, the respondents believe that data gathered through IoT application helps to comprehend the customer's requirement, thus enabling retailers to maintain right level of stock.

Data captured through RFID and smart shelves is profusely used to manage inventory levels and it saves hell lot of inventory cost. You never run out of stock and also it mitigates excess inventory risks (R16).

Theme 8: IoT application aids in integrating Omni channel Experience

Integrating data across channels is much easier with IoT implementation. It reduces friction in omnichannel capabilities and makes it easier to understand and manage customer expectations across channels (R9).

Theme 9: Create Smart store through IoT driven techniques and applications.

It is era of digitization. Our customers are smart; the stores have to be smart enough. IoT application enables to create a smart store that transcend store experience. We use RFID

tags and have digitized spaces. We have implemented cashless payment and self-check-out counters. Overall, it is a well-connected smart store (R13).

All the retailers believe that it is time for having futuristic mindset and going forward the stores have to be smarter to achieve competitive advantage. It was discussed that IoT is fundamentally changing the retail game. They reiterated that the strategic application of IoT in retail store can help them achieve that.

What are the Risks Associated with IoT Application?

Theme 10: Data management and customer privacy protection are the major risks. Some significant responses generated related to this theme are provided below:

The journey is not as smooth as it looks. There are several technological and implementation challenges (R27).

Biggest issue is maintaining copious amount of data. You get access to data-excellent! But what you do with that data is a million-dollar question and that is your game changer (R18).

Maintaining data privacy is a big issue. And also if don't find a right IoT service providers, you land in a mess. That is a huge risk (R23).

Most of the retailers feared a few risks associated with the IoT application. As mentioned above, intricacy of data management, privacy of customer data, technological investment and maintenance are the main areas of concerns.

Based on the secondary and primary data collected, researchers propose a theoretical framework (Figure 1). The relationship between the various variables of framework can be further tested through a quantitative study.
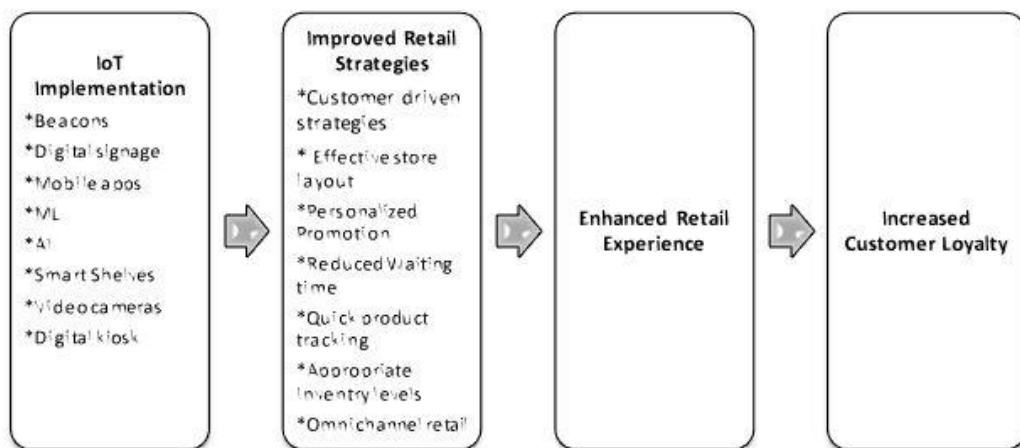
FIGURE 1
A THEORETICAL FRAMEWORK OF IOT IMPLEMENTATION IN RETAIL INDUSTRY

CONCLUSION AND IMPLICATION

The study contributes to existing body of literature on IoT application in the digital era by analyzing the opinions and practices of the leading retailers in UAE. The findings indicate that retailers in UAE strongly believe in the powers of IoT for creating a seamless shopping experience for digital savvy consumers. All the respondents optimize the use of IoT to survive and sustain in competitive retail landscape. Data captured through RFID, smart shelves, m-apps, AI, digital signage and video cameras helped them develop deeper insight into customers' behavior which is critical for a holistic and competitive strategic formulation. However, there were some concerns raised regarding data security, privacy and management. The study has implications for the researchers, new and established retailers, strategy formulators and IT service providers. Retailers must be thoroughly aware of the the IoT techniques and solutions to harness its maximum benefits. The findings of the study can also be used by the retail partners -IoT manufacturers and service providers- to better understand the requirements of the retail industry.

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