



**HAL**  
open science

# Impact of Digital Transformation on Retail Banking Industry in the UAE

Umesh Kothari, A. Seetharaman

► **To cite this version:**

Umesh Kothari, A. Seetharaman. Impact of Digital Transformation on Retail Banking Industry in the UAE. International Working Conference on Transfer and Diffusion of IT (TDIT), Dec 2020, Tiruchirappalli, India. pp.425-438, 10.1007/978-3-030-64849-7\_38 . hal-03701767

**HAL Id: hal-03701767**

**<https://inria.hal.science/hal-03701767>**

Submitted on 22 Jun 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

# IMPACT OF DIGITAL TRANSFORMATION ON RETAIL BANKING INDUSTRY IN THE UAE

Umesh Kothari and Dr. A. Seetharaman

## Abstract

The UAE's banking industry has emerged as one of the most dynamic in the region, and the largest financial center in the Middle East. The industry has been confronted with 'digital disruption', 'digitization' 'digital banking'. The key reasons for digitization in addition to competitiveness include improved banking efficiency, attracting and retaining customers, improving analytics, launching innovative services and enhancing customer experience. However, organizations struggle with the implementation of digitalization initiatives and fall behind in achieving their plans. There is very limited literature written on the research to study impact of digital transformation on the retail banking industry in the UAE. Moreover, it is based on secondary research. This study aims to identify the variables that drive digital transformation and study the impact of digital transformation in Retail Banking Industry in the UAE. The results of the study show that customer needs, technology, regulation, business processes, skills and competencies impact digital transformation and should support retail banks in developing a theory of digital transformation in their journey to excel in a competitive marketplace.

**Key Words:** Digitization, Retail Banking, Strategy, Transformation, Technology, Customer Experience

## 1.0 Introduction

### 1.1 Digital Transformation

Digital Transformation or disturbance is not a disengaged event yet is something that has occurred since 1990s with various interruptions happening crosswise over various kinds of industry fragments. (Shrivastava, S. 2017) At first the music, photography and video were altogether upset by new participants and new players who were grasping computerized and digital innovation.

During the 2000s, another arrangement of enterprises began to be disturbed by digital revolution, such as Television, travel and enlistment. (Isaksson, A. J. et al. 2018). A third surge of digital disruption has undergone especially with more changes in the retail industry post 2000s. The 2010s are undergoing a third wave of digital disruption. This can be attributed to the change in customer preferences to associate with brands. (Valenduc, G., & Vendramin, P. 2017).

### 1.2 Digital Transformation – Retail Banking

Digitization is different from the customary strategies fundamentally because of new developments such as social media and use of internet. (Andersson, L 2016) This has led to changes in a wide range of businesses such as cars industry. Finance and healthcare are the next industries that are going to change as part of this ongoing disruption.

The retail banking system is facing challenges in its digital transformation journey. Inherited technology landscape, fostering agility, reducing time to market for new products and effectively using customer data to better engage customer and manage customer relationships make digitization in retail banking banks more of a necessity than a choice.

### 1.3 Digital Transformation – UAE

Over the years, the UAE has become known as the key financial hub for the Middle East and one of the world's leading financial centers. We have recently seen a renewed drive to move the country to a global innovation center with a number of exciting initiatives announced and embarked upon: Artificial Intelligence, Blockchain and FinTech.

## 2.0 Research Questions

The primary aim of this study is to understand the digital transformation and its impact in UAEs Retail Banking industry via the following questions.

- a. What do customers expect from a digital bank?
- b. What technology investments are needed by Banks to support digital transformation?
- c. Does digital transformation respond to the business process and vice versa?
- d. Does digital age reshape the organizational skills and competencies?
- e. Do regulatory and compliance impact digital bank?

## 3.0 Research Objectives

As a solution to the above research questions the study is aimed to answer the following research objectives.

- a. To explore customer needs and expectations from a digital bank
- b. To understand the role of technology as an enabler in Bank's digital transformation journey
- c. To diagnose the processes to be automated by digital banks
- d. To recognize the skills and competencies required by a digital bank to help the bank achieve its growth plans
- e. To study the regulatory and compliance requirements that could impact a digital bank

## 4.0 Scope of the study

Over the years, the UAE has become known as the key financial hub for the Middle East and one of the world's leading financial centers. There has been a renewed drive to move the country to a global innovation center with a number of exciting initiatives announced and embarked upon: Artificial Intelligence, Blockchain and FinTech. In order to make in in-depth study, this qualitative research is confined to digital transformation in retail banking of UAE.

## 5.0 Literature Review

Digitization is modifying our daily lives in terms of how we interact with each other and handle personal data. Various organizations have essentially no other option but to adjust their customary styles and policies to digital auxiliary change (Deutsche Bank, 2014). Specially financial companies face with the paradigm 'digitalize or die'.

The banking industry plays an important role in the county's economic development—around 8% of GDP, and 13% of non-oil sector domestic product.

The Central Bank of the UAE promotes financial stability, resilience in the financial system and protects consumers through effective supervision that supports economic growth. The banking sector is overbanked, with a total of 49 Banks (22 national and 27 foreign banks) operating in the UAE in 2019 (UAE Central Bank Report, 2019) and a population of 9.7 million people (EIU, June 2019).

The literature review is structured according to the variables considered in this research. The dependent variable is impact of digital transformation on retail banking. The different independent variables are: (i) customer needs (ii) technology; (iii) business process; (iv) regulation; and (v) skills and competencies. The added value of this research paper lies in providing deeper understanding of the multiple aspects of digital transformation.

### 5.1.1 Customer Needs

One of the most critical areas that banks are trying to improve through digital banking is customer experience. The customer expectations are continuously being raised by the experience provided by hi-tech companies like Google, Apple, Amazon, and Facebook. Customers expect similar experiences from their financial services providers. As

banking products get standardized, drivers of customer experience have changed, and consider 'service' as a key factor in selecting their financial services provider.

Banks in the UAE have begun to introduce different digital solutions in line with customer's needs to maximize customer experience.

- Emirates NBD offers new banking services through its digital channels to optimize operational efficiencies and enhance customer service.
- Mashreq provides mobile banking solutions through an application called Snapp to build on customer convenience and accessibility.
- Standard Chartered offers a mobile application that prompts users with real time and personalized offers from retailers operating nearby. This interactive solution ensures improved customer experience with the Bank.

Banks are looking at new opportunities pertaining to changes in consumer demand, the continuing technology revolution and evolving staff requirements. Banks should continue to invest in digital and electronic tools for customers and related internal processes to compete in the marketplace. New players in the payment industry has led to new competition for Banks. Footfall levels in retail branches are expected to fall thereby forcing banks to respond with a whole new model of retail banking. (Neil Austin 2014).

### **5.1.2 Technology**

While technology plays a pivotal role in supporting banks to achieve their goals, banks are hampered by inflexible, legacy technology infrastructures that are making change very challenging.

The banking industry is confronting a period of disruptive change. FinTech's have been able to drive change through speed, agility and insight without the burden of legacy systems. These disruptive innovators have challenged the practices followed by Banks and have provided customers with innovative, easy-to-access and easy-to-use financial solutions that are more similar to those offered by Amazon and Apple than of a traditional banking experience. Banks are slow to respond to these changes as they face a dilemma between their well-established business models and to adapt to the rapidly evolving customer needs. The next-generation technology model that progressive banks are adopting is based on outsourcing and building relationships with strategic partners (Norman J. DeLuca 2016).

Customer Engagement and Fulfillment is making an impact in the financial services value chain. The digital wave will not necessarily be a tsunami for all businesses. Some are capable of adapting to the new environment and thus able to resist. They can change their operating methods and refocus their strategy. The financial services business is customer-facing, competitive, distribution- sensitive and turnaround-time sensitive. (Ajay Shukla and Shriram Nerlekar 2019).

Banks need to be mindful of newer competition from fintech companies that have unbundled the value chain of banks by specializing in their different areas such as payments, money transfer. These new competitors are highly flexible and tend to have a low-cost structure. (E. Giaretta and G. Chesini 2018). Lately, FinTech organizations and new businesses have participated in this change management process changing the banking business environment i.e. personal loans, web-based services, investment solutions in order to attract new clients along with unrivaled services and support to its existing customers.

### **5.1.3 Business processes**

It appears that Banking institutions are still operating through physical branches which is expected to be visited less by customers in the future. Some banks in Sri Lanka have started to curb expanding their branch operations. As a strategy Banks are increasingly encouraging and promoting the use of digital non-channels by its customers. (H M Hennayake Bandara 2016).

One of the main benefits of process automation is that it gives banks a competitive advantage to customize product and service offerings in line with customer needs and expectations. It also decreases costs, errors thereby increasing reliability and building on customer trust (Magdalena Swacha-Lech 2017).

#### **5.1.4 Regulation**

Banks would be subject to regulations, an area still not applicable to FinTech. However, a fully transformed bank through digital approaches could reasonably be expected when virtual cash gets true and will simplify the exchange. A strategy to blend customary banking practices with Fintech services could provide best results to the banking clients. (Tatjana Vasiljeva and Kristina Lukanova 2016)

The recent advanced digital models pose new threats pertaining to digital security, consumer protection, operational stability and cheating. These risks are not addressed by the existing methods in the regulatory domain. Hence there is a need to enhance the regulatory structure to include these new threats accommodating digital innovation making the banking industry more robust for the future. Digital dangers and threats may not only create economic damage but also impact the customer's confidence in accepting new technologies even if they enhance customer experience especially due to safety and security issues. (José Manuel González-Páramo 2017).

The banking sector expends greater amount on Information and Technology compared to other industries. The sector grapples with issues related to compliance that is estimated to cost the sector more than \$100 billion annually. The continuing issues of managing and analyzing data faced by banks could lead to the use of sub optimal technology solutions with low utility to address business objectives. Regulatory Technology in the current banking environment has more potential to achieve potential gains made through digital transformation with relatively less investments in resources. (Butler T., and O'Brien L 2019).

#### **5.1.5 Skills and Competencies**

The digital age is reshaping the way in which organizations, recruit, select and develop skills for a new generation of employees. An important challenge for organizations is to find the right balance and incentives to develop digital skills for Generation Y members that despite the fact that are professionally well equipped they lack the ability to become real business problem solvers and to generate profit for companies (Alina Daniela Mihalcea 2017).

Digitalization brings innovation, ease of working, new job opportunities and growth in the economy. It is not only important to have the digital tools available but also the knowledge and benefits to use them. The future of Indian Banking sector is transformative with the use of technology-based solutions to increase customer experience, cost optimization and manage organization risk (Bhagyashree N. Deshpande 2018).

Digital transformation requires highly trained people with specialized expertise. The challenge is to find a structure for these partnerships that will create a compelling value proposition so that the staff are motivated not just to stay but also to do their best work. (Kumar et al 2019).

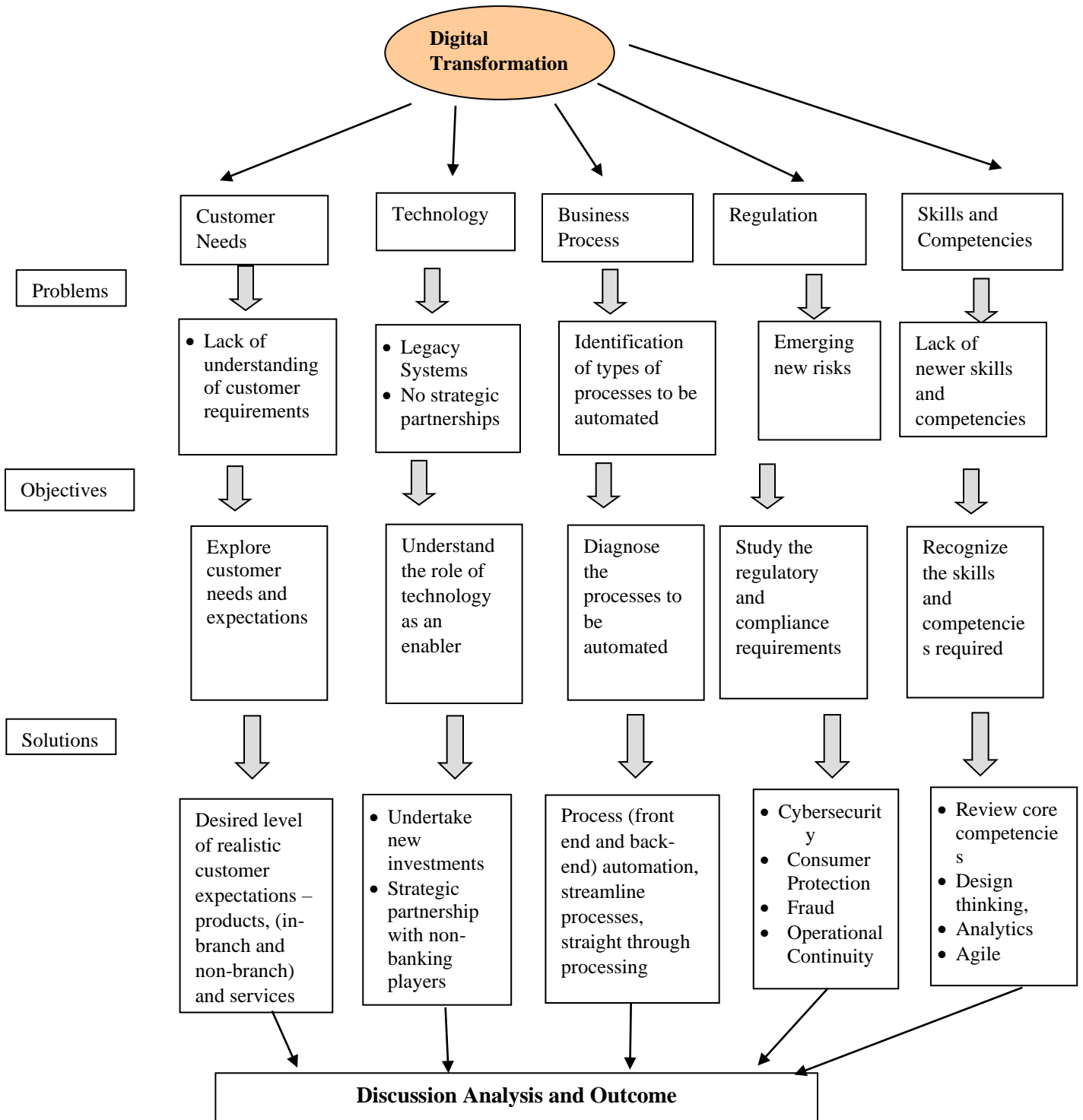
### **6.0 Research Methodology**

Research Methodology helps to bridge an understanding gap in a structured and systematic manner (Saunders et al. 2016). Research Methodology is a science of studying the techniques based on which the researcher can decide what study is to be conducted. Besides it is a logical, productive and planned steps that help in a better understanding of a phenomena (Zikmund 2009).

Information for research was gathered from different sources of secondary data. Most data were collected from an online search of relevant indexed journals, industry reports and reference books. The research methodology details the existing core variables identified through an exhaustive literature survey. A simple direct relationship between five core variables - customer needs, technology, business process, skills and competencies and the impact on digital transformation is positioned in the research model.

## 7.0 Research framework

From the literature review exercise carried out a proposed research framework is developed as shown below. The impact of the digital transformation is the dependent variable.



## **7.1 Discussion, Analysis and Outcome**

### **7.1.1 Customer Needs – Problems, Solutions and implementation**

A study to understand the skills required by agile digital banks would benefit banks in the UAE. Moreover due to evolving customer needs and segments and increasing usage of digital tools in their day-to-day habits these customers expect the same from banks. Hence financial service institutions need to offer products and services to meet the requirements of the target segment.

Customer needs and their management are of great significance to customer service and satisfaction. There is a clear prerequisite to approach customer needs and expectations differently and proactively for professional services rendered by organizations as customer expectations are much more complex and hence it is necessary to understand different customer needs. (Butt, M. W., & Butt, U. J. 2020).

Banks need to adopt to new digital and advanced tools and techniques in the future. Speed of service and use of digital tools would be determined by the pace of implementation of laws and related frameworks (Sajic et al 2018).

Further, banks in UAE should discover and implement Customer relationship management techniques to explore and scan new customers, acquire new customers, retain the existing customers and retrieve the defective customers. These tactics spark increased customer satisfaction by meeting their changing needs and expectations from a digital bank. Larsson, A., & Viitaoja, Y. (2017) highlights the perceived insecurity around what the bank assumed to know about its customer's proficiency and experiences and what customers appeared to actually know. By the application of CRM, bank managers should garner awareness and acceptance of digitalization among customers to fulfil customer needs and expectations. This step builds customer loyalty in digital banking.

### **7.1.2 Technology – Problems, Solutions, and implementation**

When undertaking digital transformation many businesses do not want to abort their legacy systems. The decision makers often find it challenging to integrate new age technologies with existing legacy systems in a seamless manner They need to ensure that digital solutions are user-friendly and easy-to-use so that it will also help employees to carry out business activities without putting extra time and effort. (Prasad, R., & Sridhar, V. 2015). This requires strengthening existing infrastructure by technology investment. (Nyadzayo, M. W., & Khajehzadeh, S. 2016).

Digitization in banks has become more of a necessity than a choice. The banking system faces many challenges in its digital transformation journey such as inherited technology landscape, fostering agility, reducing time to market for new products and effectively using customer data to better engage customer and manage customer relationships.

Banks could look at entering into strategic partnerships with fintech companies who specialize in different areas such as payments, money transfer. These partnerships would allow banks to capitalize on their expertise and resources since fintech companies have a low-cost structure. (Shelepov, A. 2017).

Technology acceptance model helps to ascertain the behavioural intention to buy motivated by usefulness of the digital technology and its ease of use. Basing on systems life cycle of the digital technology and time required for learning or experience curve, digitalisation is inducted with the assurance of pay back period or Net Present value of investment decisions. This ensures the role of technology as an enabler in achieving sustainable journey of digital transmission. (Marangunić, N., & Granić, A. 2015).

### **7.1.3 Business Process – Problems, Solutions and implementation**

While making a digital transformation strategy organization need to focus on digitizing conventional business process efficiently and flawlessly. An organization must undertake digital transformation by automating various business activities. It needs to automate the business processes in several phases. (Marques, M. I. N. 2017).

It is necessary that the banking institutions spend on implementing solutions that are new and digitally advanced. These could be related to payments gateway, data analytics and mechanization of processing service

requests. Banks must consider offering services through online channels and must have back-end activities to support the same. (Tatjana Vasiljeva and Kristina Lukanova 2016). Business process involves restructuring and regrouping bank resources namely men, machine, materials, methods and money.

Regrouping or restructuring of resources through cost and asset reduction to reverse declining sales and profit. Digitalization of public telecommunication services is primarily driven by technology developments within the Wide Area Networking market which could be used by speedier banking services. The few fundamental trends within this market are the advent of downsizing or right sizing. (Chouhan, N. 1994). Now, this dream of last decade of 20th century has become true in retail banking sector which is heading towards branchless banking by creation of automated digital banks.

#### **7.1.4 Regulation – Problems, Solutions and implementation**

Security issue appears to be a key concern for customers when there is talk of taking personal and financial information online. Customers do not want to risk their privacy when using banking services which can hamper digital transformation. (Belás, J., et al. 2016).

Individuals voluntarily share a lot and different types of information on the social networking sites like Facebook, Twitter and rely on these sites as a primary communication medium of communication professionally and personally. In this process a large bunch of individual data is collected. Individuals voluntarily share personal information and a huge amount of identifiable material is gathered during the start of a business relationship. A key area of concern for social media operators is to safeguard and protect the data that is gathered from the customers and non-customers. (R. Narayanaswamy and L. McGrath 2014).

Digital transformation must include a sophisticated security policy to protect the applications and data from various targeted security attacks. It must implement the latest data privacy regulations to collect and leverage customer data over a longer period. Organizations must address issues related to information security and data privacy. (Bouyon, S., & Ayoub, J.(2018).

The adoption of Information Security Systems is looked at as a quite complex task within organizations and should adopt Cyber Security standards with clear guidelines on Information Systems Security. (Gamundani, A. et al. 2019). Legislature is expected to evolve on an on-going basis in the interest of the individuals and organizations that use automated devices in their operations.

The current state of the market for cyber safety is information security market is puerile. In this scenario comprehensive tools and technologies may not be available in the market place. (Philip K. Kiilu and Dr. David M. Nzuki 2015). Banks must also take into account the stringent regulations on prudent capital requirements and payment services.

Control arises due to inherent imperfections of things and people. Voluntary and governmental regulations play a pivotal role by applying the principles underlying Information Security Control Theory. The study by Anderson, C. et al (2017) focuses that Information Security Control Theory offers a good framework for the information security policy development process balancing the protection of information resources with the need for sharing information in many domains including banking industry. This also fulfils regulatory and compliance requirements that could impact a digital bank.

#### **7.1.5 Skills and Competencies – Problems, Solutions and implementation**

Banks need to adapt their existing service models to changing customer expectations and cost-awareness. It is believed that new ways of doing tasks through collaborative working would be required for companies that are undergoing a digital transformation program.( Sanyal, S., & Hisam, M. W. 2018).

Banks need to develop digital skills in order to compete. While hiring is increasingly taking place by financial institutions from various external exhibitions and forums, less emphasis is given to interdisciplinary skills. This is important as functional knowledge is a minimal component of the overall skill requirement. Skills that



support and transform automation to the organizational goals are critical. Moreover, people who are able to effectively use data and information to support business decisions would be demand by banks. (McKinsey 2016).

The digital competencies of the workforce and the ways in which technology are used in the workplace will continue to develop and change. Organizations need to explore the technological competencies by staff alongwith optimum benefits of deploying digital tools in achieving desired outcomes (Colbert et al 2016).With the customer in mind new developments in integrated design thinking are being considered to build on customer service (Jukka Ojasalo and Katri Ojasalo 2018).

Digital literacy proclaims digital skills namely operational, technical and formal; information, cognition; digital communication; digital content creation; and strategic. These skills help the advancement of digitalization in several sectors. (Iordache, C.et al. 2017) This is more relevant for banking industry by recognizing the skills and competencies required by a digital bank to help the bank achieve its growth plans.

## **8.0 Research Implications**

The study findings are based on qualitative research based on recent studies and validated secondary data. A meta-analysis of the study findings is provided and detailed for enhancing digital transformation within an organization. A new conceptual framework is provided and substantiated for digital transformation in retail banking in the UAE should help to apply a digital transformation theory as a holistic approach to move retail banks from traditional and simple digital efforts to managerial, cultural, procedural, technological and developmental changes of the overall bank.

Using a theory of change approach this study should derive a definition of digital transformation as an outcome variable and the necessary preconditions and activities to reach the outcome.

The research findings should help banks to determine the best answer to introduce digital transformation initiatives in UAE to satisfy customers and achieve growth objectives in the retail banking sector. This research would help to achieve a stability and consolidation digitalization in retail banking of UAE. Thus, this research contributes to banking practice.

### **8.1 Contribution of theory (Theory of Transformation)**

A comprehensive theory of digital transformation involves four interlinked elements namely a theory of social reproduction, a theory of the gaps and contradictions of reproduction, a theory of trajectories of unintended social change, and a theory of transformative strategies. The first of these elements provides an account of social culture of UAE by the evolving customer needs and expectations in responsiveness with social system of UAE. The second shows how in spite of environmental, emerging new risks and legacy technologies there are possibilities of digital transformation to bridge the gaps that exist in achieving business objectives of retail banking in an optimum manner in UAE. The third specifies the possibilities of developing new skills and competencies to build an agile organization in its transformation in UAE. And finally, the fourth component of transformation attempts to provide direction on formulating clear strategies, innovation, aligning business processes to smoothen digital transformation in retail banking in UAE. In this connection, Michael Porter's generic strategies namely cost leadership and differentiation can be applied. These four theoretical agendas are interrelated while digitally transforming the retail banking in UAE.

## **9.0 Limitations and scope for future research**

The literature studied is based on secondary data. Secondary data may be irrelevant as the data may have been collected at a time period which could be outdated. Hence the use of the information obtained may be restricted. Moreover, secondary data might be available but may not include all the required (Sreejesh et al 2014). Secondary data has no control over its accuracy. Research conducted may be biased to support the vested interests of the source (Zikmund 2007).

There is a lot more to study and explore on this topic, especially on the different aspects that impact digital transformation among Retail Banks. In addition, further research could narrow the study down to retail banking in the UAE where customer data could be collected as secondary data is either not available or is highly confidential hence cannot be accessed. The future research can make use of primary data through surveys or interviews.

It appears that digital transformation needs to be further explored especially in the UAE and in the Retail Banking industry. The authors of the literature review exercise that have been studied digitalization in retail banking are in the developed world, emerging economies with limited studies pertaining to UAE.

The future research can make use of primary data through surveys or interviews. Limited research is carried out to correlate impact of the digital revolution within banking sectors and customer experience globally. Limitation to such empirical study is due to the slowness in the advancement of digital banking technology in this Asian region. Future survey could be carried out with a statistically robust sample (Viknesh Venkathaialam and Abdulkadir Shehu Abdulwahab 2017).

## **10.0 Conclusion**

The varying dynamic demand of different customer segments that is attained to be met by banks appears to be a key challenge for financial institutions in their digitization plans. These needs range from obtaining an account balance on their mobiles to submitting a loan application to the bank through an on-line channel. Customers also prefer convenience related to payments or remittances made through the internet. In the midst of these needs of customers it is essential to consider those segments for whom a branch is preferred channel to interact with the bank and should be conveniently located. Customers believe that their needs would be addressed by financial institutions through digital tools like those adopted by companies in other industries.

In addition to the always developing customer requirements, Financial institutions are also facing stress from FinTech's to implement digital transformation approach alongwith technological advancements. It is therefore imperative that financial institutions to reexamine their business strategies and operating models. It is believed that these reviews would lead to adoption of advanced and emerging technologies.

In a data and information driven environment it is necessary for banks to focus on transparency to assure trust and reliability to its consumers. This may lead to an increase in competition among banks if consumers select products that meet their desired needs. Due to limitations of volume of data that the consumer would have to deal with through long applications and contracts resolving transparency concerns may not be simple for banks. Rhoen (2016) too, points out the importance of a logical application of consumer protection legislation that would addresses the requirements of regulatory bodies.

Agility is important for organization to ensure the right staff attitude, positive revenue and success in digital transformation. A phased approach could be adopted by financial institutions to align procedures and achieve the transformation agenda. The initial phase could be a hybrid one until digitization is achieved. Banks could execute modifications by introducing automation and advanced technologies and tools (Sajic et al 2018).

Banks would need a set of processes that are aligned with digital interactions in order to compete successfully based on the expectations that have been set by all of the other digital brands. It is believed that the crucial activities could include customer on-boarding, request origination and value estimations. The digital transformation theory should support retail banks in the UAE to implement a comprehensive transformation program and thereby achieve their strategic goals to differentiate in the competitive Using a theory of change approach this study should derive a definition of digital transformation as an outcome variable and the necessary preconditions and activities to reach the outcome.

## **References**

- Anderson, C., Baskerville, R. L., & Kaul, M.: Information security control theory: achieving a sustainable reconciliation between sharing and protecting the privacy of information. *Journal of Management Information Systems*, 34(4), (2017) 1082-1112.
- Andersson, L., Lanvin, B., & Van der Heyden, L.: Digitalisation Initiatives and Corporate Strategies: A Few Implications for Talent. e Global Talent Competitiveness Index, (2016) 201751.
- Ádám Kerényi and János Müller.: Brave New Digital World? – Financial Technology and the Power of Information, *Financial and Economic Review*, 18(1), 5-32 (2019) doi.org/10.33893/FER.18.1.532
- Alina Daniela Mihalcea.: Employer Branding and Talent Management in the Digital Age, *Management Dynamics in the Knowledge Economy*, 5(2), 289-306 (2017) DOI 10.25019/MDKE/5.2.07
- Ajay Shukla and Shriram Nerlekar.: Impact of digitization transformation on financial markets, *MET Management Retrospect*, 3(1) (2019).
- Belás, J., Korauš, M., Kombo, F., & Korauš, A.: Electronic banking security and customer satisfaction in commercial banks. *Journal of security and sustainability issues*. (2016).
- Bhagyashree N. Deshpande.: Digitisation in Banking Sector, *International Journal of Trend in Scientific Research and Development*, Conference Issue (2018)
- Bouyon, S., & Ayoub, J. : Consumer Credit, Digitalisation and Behavioural Economics: Are new protection rules needed? (No. 13831). Centre for European Policy Studies (2018).
- Butler T., and O'Brien L.: Understanding RegTech for Digital Regulatory Compliance. In: Lynn T., Mooney J., Rosati P., Cummins M. (eds) *Disrupting Finance*. Palgrave Studies in Digital Business & Enabling Technologies. Palgrave Pivot, Cham (2019).
- Butt, M. W., & Butt, U. J.: Digitalisation of the Global FinTech Industry. In *Handbook of Research on Innovations in Technology and Marketing for the Connected Consumer* (pp. 431-449). IGI Global (2020).
- Chouhan, N. : Application of transputer links and routers in telecommunication systems. In *IEE Colloquium on T9000 Transputer* (pp. 3-1). IET (1994).
- Colbert Amy; Yee, Nick; and George, Gerard.: The digital workforce and the workplace of the future. *Academy of Management Journal*. 59,(3), 731-739. Research Collection Lee Kong Chian School of Business (2016) doi.org/10.5465/amj.2016.4003
- Gamble, Arthur A. Thompson, Jr., A.J. Strickland III, John E.: *Crafting and executing strategy: the quest for competitive advantage: concepts and cases* (17<sup>th</sup> edition). Boston: McGraw-Hill/Irwin. P. 149. (2010). ISBN 9780073530420
- E. Giaretta and G. Chesini.: Digital innovation and profitability. Evidence from European financial institutions, FM Classification code: 510 – Depository Institutions – Management. JEL classification: G21, G28, P51 (2018).
- Gamundani, A., Bhunu-Shava, F., & Bere, M.: A Digital Economy Technology Intergration Model Incorporating the Cyber Security Layer. In *ICCWS 2019 14th International Conference on Cyber Warfare and Security: ICCWS 2019* (p. 65). Academic Conferences and publishing limited (2019).
- H M Hennayake Bandara.: *Digital Banking: Enhancing Customer Value*, 28th Anniversary Convention (2016).
- Iordache, C., Mariën, I., & Baelden, D.: Developing digital skills and competences: A quick-scan analysis of

- 13 digital literacy models. *Italian Journal of Sociology of Education*, 9(1) (2017).
- Isaksson, A. J., Harjunkoski, I., & Sand, G. : The impact of digitalization on the future of control and operations. *Computers & Chemical Engineering*, 114, 122-129 (2018).
- Jacques Bughin and Nicolas van Zeebroeck.: The best response to digital disruption, *MIT Sloan Management Review*. (2017).
- José Manuel González-Páramo.: Financial Innovation in the Digital Age: Challenges for Regulation and Supervision, *Financial Stability Magazine*, 32 (2017).
- Jukka Ojasalo and Katri Ojasalo.: Service Logic Business Model Canvas, *Journal of Research in Marketing and Entrepreneurship* (2018).
- Magdalena Swacha-Lech.: The main challenges facing the retail banking industry in the era of digitalisation, *Journal of Insurance, Financial Markets and Consumer Protection* 26 (4/2017): 94-116.
- Marangunić, N., & Granić, A.: Technology acceptance model: a literature review from 1986 to 2013. *Universal Access in the Information Society*, 14(1), 81-95 (2015).
- Marques, M. I. N.: Which strategy should retail banks pursue relatively to marketing automation depending on the type of customer? (Doctoral dissertation) (2017).
- Mirko Sajic, Dušanka Bundalo, Zlatko Bundalo and Drazen Pasali.: Digital Technologies in Transformation Of Classical Retail Bank Into Digital Bank, *International Journal of Engineering* (2018).
- Neil Austin.: The future of the financial workplace: Banks, workplace and property in a changing world. *Corporate Real Estate Journal* 4(2) (2014).
- Norman J. DeLuca.: Smart banks can win: Leveraging next-generation technology to win the battle for the customer relationship, *Journal of Digital Banking*, 2 (2016).
- Nyadzayo, M. W., & Khajehzadeh, S. : The antecedents of customer loyalty: A moderated mediation model of customer relationship management quality and brand image. *Journal of Retailing and Consumer Services*, 30, 262-270 (2016).
- Philip K. Kiilu and Dr. David M. Nzuki.: Factors Affecting Adoption of Information Security Management Systems: A Theoretical Review, *International Journal of Science and Research*, 5 (12) (2015).
- Prasad, R., & Sridhar, V. : The dynamics of spectrum management: legacy, technology, and economics *Management*, 40(3), 388-391 (2015).
- R. Narayanaswamy and L. McGrath.: A holistic study of privacy in social networking sites, *Academy of Information and Management Sciences Journal* 17(1) (2014).
- Rhoen, M.: Beyond consent: improving data protection through consumer protection law. *Internet Policy Review*, 5(1) (2016).
- Rogers, D.: *The Network Is Your Customer: Five Strategies to Thrive in a Digital Age* (pp. Xvii-Xx). New Haven; London: Yale University Press. (2010).
- Saunders, M, Lewis, P & Thornhill, A.: *Research Methods for Business Students*, 7 edition, Pearson Education Limited, Harlow, England (2016).
- Sanyal, S., & Hisam, M. W. : Impact of training and development on the performance of employees- A

- comparative study on select banks in sultanate of Oman. *International journal of scientific research and management*, 6(03) (2018).
- Shelepov, A.: New and traditional multilateral development banks: Current and potential cooperation. *International Organisations Research Journal*, 12(1), 127-147 (2017).
- S. Sreejesh, Sanjay Mohapatra and M.R. Anusree.: *Business Research Methods, An Applied Orientation* (2014).
- Shrivastava, S.: Digital Disruption is Redefining the Customer Experience: The Digital Transformation Approach of the Communications Service Providers. *Telecom Business Review*, 10(1), 41 (2017).
- Tatjana Vasiljeva and Kristina Lukanova.: Commercial Banks and Fintech Companies in the Digital Transformation: Challenges for the Future, *Journal of Business Management*, 11 (2016).
- Valenduc, G., & Vendramin, P. : Digitalisation, between disruption and evolution. *Transfer: European Review of Labour and Research*, 23(2), 121-134 (2017).
- Viknesh Venkathaialam and Abdulkadir Shehu Abdulwahab.: The Impact of Digitalization of Retail Banks in Malaysia on Customer Experience, *International Journal of Accounting & Business Management*, 5(2). (2017).
- Zikumnd, Babin, Carr, Griffin.: *Business Research Methods*. Eighth edition (2009).