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# Developing a Framework using Interpretive Structural Modeling for the Challenges of Digital Financial Services in India

*Completed Research Paper*

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## Abstract

*Digital financial services (DFS) can expand the delivery of basic financial services to the poor through innovative technologies like mobile-phone-enabled solutions, electronic money models and digital payment platforms. By 2020, it is estimated that the mobile will have the potential to serve about 250 million people for financial services in India. Yet there remains a long way for India to go in digital finance. Realizing this, the objectives of the current research are to recognize various key challenges of DFS, to find contextual relationships between various challenges and to develop a hierarchy of challenges to promote DFS in India. The findings revealed 45 contextual relationships among the key challenges using experts' inputs. Implementing interpretive structural modelling (ISM) indicated "Lack of literacy/digital literacy (C4)" and "Universal unavailability of Internet (C8)" as the key driving challenges coming on the way of using DFS.*

**Keywords:** Digital financial services, ISM, MICMAC, Challenges, Trust, India

## Introduction

Financial inclusion is one of the most essential parameters of economic development, which also assists in the poverty reduction and can act as a way to prevent social exclusion (Aaluri et al., 2016). The financial inclusion can be improved using Digital Financial Services (DFS), which has been attributed as one of the key financial solutions. The market forces alone are not sufficient for ensuring the supply of products and services, which are essential for end users' needs, means or wants as the directed end-users generally have little to offer against apparent profitable chances. Hence the potential of DFS might get hurt due to inadequate uptake and usage, which means it would marginally affect the phenomenon of financial inclusion (Buckley and Malady, 2015).

Digital payments are dramatically increasing around the world. Global non-cash payments grew by 8.9% in 2014 and mobile payments are projected to grow by a staggering 60.8% in 2015 (Buckley and Mas, 2016). The customer side operations of the firms are being transformed by digital technologies and the firms are keenly searching for useful digital business strategies to improve these technologies (Setia et al., 2013). DFS provides their customers with flexibility in accessing financial services. In less

developed countries, DFS can increase the proportion of the population participating in the formal financial system, particularly among rural communities that have previously experienced minimal access to banking and financial services. DFS can be accessed in any urban or rural area offering mobile and/or Internet coverage (Finau et al., 2016).

The population of India is more than 1.2 billion of which 60% people are under-banked, while as many of 75% possess the mobile phones. The cash payments are still most popular means of payment for about 67% of the country's population. Only 10% of Indian population uses debit or credit cards and money transfer via expensive and informal channel such as hawalas is common. In this context, the innovative DFS needs to be adopted as a big opportunity to realize financial inclusion. By 2020, it is estimated that the mobile will have the potential to serve about 250 million people for financial services in India. However, there is still a long way to go and a number of challenges to overcome (Amarante Consulting Group, 2014). Research has not comprehensively addressed what inhibits DFS in India (Srivastava and Sharma, 2017). Therefore, it has been perceived significant to identify and analyze various key challenges of DFS in India. Therefore, the current research work has the following objectives:

- To identify key challenges of DFS in India;
- To evaluate the contextual relationships among identified key challenges;
- To group identified challenges into different regions (autonomous, dependent, linkage, and independent) using their driving and dependence power; and
- To develop hierarchical framework of key challenges for eradicating hurdles to effectively promote digital financial services.

Interpretive Structural Modeling (ISM) and MICMAC approach have been identified as appropriate tools in: (i) exploring the inter-relationships among the selected challenges; (ii) categorizing them in relation to their dependence and driving power; (iii) suggests a structural decision framework of challenges, which helps government and policy analysts in removing or minimizing the hurdles to improve DFS in India.

This article is set out as follows - after introductory background, the next section reviews the current status of DFS in India, and identifies the key challenges of DFS in India. Further, methodology used in the present research has been explained. After that, the results and discussions of this research are presented. Thereafter, findings have been discussed with its managerial/practical implications. Finally, concluding remarks have been provided with the limitations and scope of future research.

## **Literature Review**

This section aims to review the current status of Digital Financial Services (DFS) in India, and identifies the key challenges of DFS in this country.

### ***Status of Digital Financial Services (DFS) in India***

As per an estimate, around 8% to 10% families in the United Kingdom (UK), 10% to 15% in the United States (US) and 7% to 10% in France do not possess a fundamental savings bank account. However, the developing countries have this problem much more severe where a large number of households (around 25% to 65%) are excluded from holding the basic account in the bank. As a result the focus of financial inclusion in India is narrowed to only providing a minimum access to savings bank account to every household (Sundaram and Sriram, 2016).

The digitization system in India was launched aggressively by the Prime Minister Narendra Modi on 1<sup>st</sup> July 2015. The primary aim of digital India program is to provide digital connectivity to rural areas with the assistance of high-speed Internet networks. The Finance Ministry is now trying to make the transfer systems efficient by creating a unified payments structure in order to provide secure and speedy transfers to recipients of various government schemes (Rani, 2016).

In India, only 0.3% of adults use mobile money as per the survey of 45,000 Indian adults conducted by the Intermedia Financial Inclusion Insight (FII) in 2014, as compared to 43% in Uganda, 22% in

Bangladesh, 48% in Tanzania and 76% in Kenya (FII, 2014). However, among all developing nations, India has the highest commitment towards banking penetration. Moreover, there is still a wider scope available in form of connecting people digitally (Ahluwalia and Bhatti, 2017). Innovative DFS are not popular in India due to existence of many key challenges e.g. lack of knowledge, inadequate infrastructure, additional cost involved, misconception about safety of funds with banks and lack of trust etc. (Dwivedi et al., 2016). The next subsection identifies key challenges of DFS in India.

### **Key Challenges of Digital Financial Services (DFS) in India**

To accomplish this task of identifying the key challenges of DFS in India, the literature was explored by searching keywords like “challenges”, “inhibitors”, “barriers” and “issues” along “digital financial services” and “digital financial inclusion” one at a time. Google scholar and Google search engine have been used to identifying the key challenges of DFS in India. The search criterion was literature published from 2013 to 2017. Extensive literature review helped us to identify ten key challenges of DFS in India. The key challenges of DFS in India are listed in Table 1 below.

**Table 1. The Key Challenges of DFS in India**

SN	Challenges of DFS	Implied meaning	References
1	Risk of using digital services	The risk related to using digital services such as mobile banking by consumer will stop him/her from using digital financial services	Leeflang et al. (2014), Lauer and Lyman (2015)
2	Safety and reliability issues	Security breaches and lack of protection against fraud and cyber-attacks in the electronic payment system will reduce consumer's engagement in using digital financial services	Gupta (2017), Kumar and Goyal (2016)
3	Privacy issues	The interception of confidential information would result in reduced consumer's trust and engagement toward using digital financial services	Castle et al. (2016)
4	Lack of literacy/digital literacy	Lack of literacy/digital literacy can discourage or impede consumers from using the digital financial services	Dwivedi et al. (2016), Khokhar (2016)
5	Lack of awareness and limited knowledge about DFS advantages	Lack of awareness and limited knowledge about the advantages provided by the digital services can reduce consumer's intention of using the digital financial services	Gupta et al. (2017)
6	Technology and networking issues	The key issues such as frequent service denial, incomplete and interrupted transactions etc. faced by consumers/mobile network operators (MNOs) will lower their trust toward digital financial services	Harsh and Wright (2016)
7	Lack of keeping pace with new technologies	Lack of keeping pace with the new technological development negatively impact the banking systems toward fostering the digital financial services	Holley (2015)

8	Universal unavailability of Internet	Lack of adequate physical network to deliver digital services to all corners of the country is a significant challenge and it negatively impacts the significant use of digital financial services	Khokhar (2016), Zhu et al. (2016)
9	Inability to reach a critical mass of consumers	The lack of mobile money and other modes of digital payment deployment to reach from zero to critical mass can impede the consumers from using the digital financial services	Deichmann et al. (2016), Foster (2016)
10	Lack of trust	The customer's lack of trust in the digital financial services and its benefits can impede them from using the digital financial services	Chauhan (2015), West (2015)

## ISM Methodology

ISM approach is used as the research methodology in this study. ISM can model the variables associated with the problem by capturing the inter-relationships among the variables. ISM utilizes practical knowledge and experience of experts to develop a logical hierarchical structure of variables positioned. In this work, ISM approach is developed following several steps (Agi and Nishant 2017; Al-Muftah et al., 2018; Dwivedi et al., 2017; Hughes et al., 2016; Janssen et al., 2018; Mishra et al., 2017), given as:

- Recognize the variables linked to the problem addressed in the research. For instance, in this work, the key challenges of DFS in India are recognized through literature survey.
- Develop contextual relationships between listed challenges of DFS. For this, it is needed to collect data.
- Develop structural self-interaction matrix (SSIM) of listed challenges through pair-wise interactions between them. We used expert's inputs to know pair-wise interactions.
- Develop initial reachability matrix (RM1) using SSIM. The RM1 is then transformed into final reachability matrix (RM1). To develop RM2, transitivity relations are considered among listed challenges.
- Compute driving power and dependencies of each challenge. For this, we sum up the values written in rows and columns of RM2.
- Develop various levels from RM2. To obtain various levels, the reachability set and antecedent set are developed. Reachability set composed of the driver itself and the other challenges influenced by it. Antecedent set composed of the driver itself and other challenges that influence the particular driver. After combining the reachability and antecedent set, intersection set is produced.
- Use MICMAC to develop a graph of listed challenges. This graph is developed through the computed driving power and dependencies of the challenges. Next, we marked four different regions (autonomous, dependent, linkage, and challenges) in the graph. Expert's inputs and driving and dependence power of challenges provides necessary ground to this.
- Develop the digraph of listed challenges through RM2. The developed digraph is useful in illustrating the visual picture of challenges and their interrelationships. Develop the ISM based structural model of challenges using digraph. ISM based model contains various levels which we are obtained through reachability and intersection set.
- Analyze the developed ISM model for its consistency through expert's inputs. In case of any consistency, some suitable actions are recommended.

## Data Analysis and Results

Data collection, analysis and related results have been discussed in the following subsections.

### *Questionnaire Development and Data Collection*

The data on selected challenges for digital financial services were gathered from a cohort of 29 professionals pursuing the executive MBA program in a Southern City called Bangalore in India. The selection of various experts was made on the basis of convenience sampling because of issues of cost and time constraints. The respondents held various managerial and technical positions such as program manager, delivery manager, information technology (IT) analyst, technical architect, consultant, network engineer, in the four multi-national software companies (i.e. Tata Consultancy Services, GSPANN technologies Pvt. Ltd.), networking (Jupiter Networks India Pvt. Ltd.) and an oil company (Shell India) in India. The demographic summary of respondents is given in Table 2.

**Table 2. Demographic Characteristics of Respondents**

Demographic Attribute	No. of Respondents	Percentage (%)
<b>Professional qualification</b>		
Graduate	21	72.41
Post Graduate	8	27.59
Doctorate	0	0.00
<b>Work experience</b>		
Less than 5 Years	1	3.45
5 to 10 Years	12	41.38
11 to 15 Years	10	34.48
16 to 20 Years	5	17.24
Greater than 20 Years	1	3.45
<b>Organization size</b>		
Less than 50 Employees	0	0.00
51 to 250 Employees	2	6.90
Greater than 250 Employees	27	93.10
<b>Sector Type</b>		
Private Sector	16	55.17
Public Sector	0	0.00
Multinational Corporation	12	41.38
Regulatory Bodies	1	3.45
<b>Annual turnover of organisations (In millions dollars)</b>		
Less than or equal to 100	0	0.00
101 to 500	1	3.45
501 to 1000	0	0.00
1001 to 5000	0	0.00
5001 to 10000	1	3.45
More than 10000	27	93.10
<b>Organisation's Name</b>		
Tata Consultancy Services (TCS)	17	58.62
Jupiter Networks India Pvt. Ltd.	10	34.48
GSPANN technologies Pvt. Ltd.	1	3.45
Shell India	1	3.45

The first section of the questionnaire constitutes the demographic attributes of the respondents whereas the second section consists of two tables – the first table consisted of identified challenges for digital financial services in context of India on 5-point Likert scale i.e. 1-not significant, 2-somewhat significant, 3-significant, 4-very significant and 5-extremely significant. The experts' responses were recorded and based on discussion with experts we decided to retain the entry with mean score of three or above. In addition, we also asked experts to modify the initially identified list of key challenges. The

mean scores for all identified challenges were more than three, hence all these challenges were selected for further analysis.

### ***Development of Self-Structured Interaction Matrix (SSIM)***

After finalizing the challenges of DFS, a self-structured interaction matrix (SSIM) is presented to fill in the contextual relationships between each pair of challenges. Four symbols are used (for filling the entries in Table 3) for indicating the direction of interaction between two challenges to digital financial services in Indian perspective (say, i and j) as follows: [1] V - Challenge i helps achieve or influences challenge j, [2] A - Challenge j helps achieve or influences challenge i, [3] X - Challenges i and j help achieve or influence each other, and [4] O - Challenges i and j are unrelated. Through the experts' feedback and using the above four notations, SSIM for the challenges of DFS is developed and shown in Table 3.

**Table 3. SSIM for the Challenges of Digital Financial Services in India**

SN	Challenges of DFS	Contextual Relationships									
		C10	C9	C8	C7	C6	C5	C4	C3	C2	
C1	Risk of using digital services	V	A	A	A	A	A	A	A	A	A
C2	Safety and reliability issues	V	O	O	O	O	A	O	X		
C3	Privacy issues	V	A	A	A	A	O	A			
C4	Lack of literacy/digital literacy	V	V	X	V	V	O				
C5	Lack of awareness and limited knowledge about DFS advantages	V	X	O	V	V					
C6	Technology and networking issues	O	A	O	X						
C7	Lack of keeping pace with new technologies	V	A	A							
C8	Universal unavailability of Internet	V	V								
C9	Inability to reach a critical mass of consumers	V									
C10	Lack of trust	-									

### ***Development of Reachability Matrix 1 (RM1) and Reachability Matrix 2 (RM2)***

According to the procedural step of ISM, the SSIM is further transformed into RM1. For developing RM1, we used binary numbers (0 and 1) that replaces the various symbols (V, A, X, O) in SSIM. The basis of this replacement is provided as:

- Use '1' in (i, j) entry and '0' in (j, i) entry when there is 'V' in SSIM.
- Use '0' in (i, j) entry and '1' in (j, i) entry when there is 'A' in SSIM.
- Use '1' in both (i, j) and (j, i) entries when there is 'X' in SSIM.
- Use '0' in both (i, j) and (j, i) entries when there is 'O' in SSIM.

In line with this, RM1 for the challenges of DFS in India was developed. Next, we transformed the RM1 into RM2 by applying transitivity rule as explained in procedural steps of ISM - Section 3. After considering the transitivity relations among the challenges, RM2 for challenges of DFS in India was developed (see Table 4).

**Table 4. RM2 for the Challenges of Digital Financial Services in India**

Challenges	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	Driving Power
C1	1	0	0	0	0	0	0	0	0	1	02
C2	1	1	1	0	0	0	0	0	0	1	04
C3	1	1	1	0	0	0	0	0	0	1	04
C4	1	1*	1	1	1*	1	1	1	1	1	10
C5	1	1	1*	0	1	1	1	0	1	1	08
C6	1	1*	1	0	0	1	1	0	0	1*	06
C7	1	1*	1	0	0	1	1	0	0	1	06
C8	1	1*	1	1	1*	1*	1	1	1	1	10
C9	1	1*	1	0	1	1	1	0	1	1	08

C10	0	0	0	0	0	0	0	0	0	1	01
Dependence Power	09	08	08	02	04	06	06	02	04	10	59

\*Adding transitivity

Next to this, we computed the driving and dependence power of each driver and summation of the entries in rows and columns of RM2 were taken.

### Partitioning of Levels

According to RM1 and RM2, we divided the challenges into various levels (importance levels) useful in development of hierarchical structure of the challenges of DFS. To achieve various levels of challenges, we formed the reachability set, antecedent set and intersection set. Reachability set composed of the challenge itself and the other challenges influenced by that challenge. Antecedent set composed of challenge itself and other challenges that affect this challenge. The combination of reachability set and antecedent set reveals intersection set. We marked Level 1 in situation where the reachability and intersection sets become equal for any challenge. For instance, the challenge 'Lack of trust (C10)' assigned level 1. Table 5 presents first iteration below.

**Table 5. First Iteration of Challenges**

DFS Challenge	Reachability Set	Antecedent Set	Intersection Set	Level
C1	1,10	1,2,3,4,5,6,7,8,9	1	
C2	1,2,3,10	2,3,4,5,6,7,8,9	2,3	
C3	1,2,3,10	2,3,4,5,6,7,8,9	2,3	
C4	1,2,3,4,5,6,7,8,9,10	4,8	4,8	
C5	1,2,3,5,6,7,9,10	4,5,8,9	5,9	
C6	1,2,3,6,7,10	4,5,6,7,8,9	6,7	
C7	1,2,3,6,7,10	4,5,6,7,8,9	6,7	
C8	1,2,3,4,5,6,7,8,9,10	4,8	4,8	
C9	1,2,3,5,6,7,9,10	4,5,8,9	5,9	
C10	10	1,2,3,4,5,6,7,8,9,10	10	I

After marking a level to challenge i.e. C10, we eliminated that challenge. We iterated this procedure until each challenge obtained at least one level. Six iterations were performed in developing the ISM based model of the challenges of DFS. The final levels for challenges are shown in Table 6.

**Table 6. Final Levels for Challenges**

Iteration	Level number	The challenges of digital financial services in India
1 <sup>st</sup>	I	• Lack of trust (C10)
2 <sup>nd</sup>	II	• Risk of using digital services (C1)
3 <sup>rd</sup>	III	• Safety and reliability issues (C2) • Privacy issues (C3)
4 <sup>th</sup>	IV	• Technology and networking issues (C6) • Lack of keeping pace with new technologies (C7)
5 <sup>th</sup>	V	• Lack of awareness and limited knowledge about DFS advantages (C5) • Inability to reach a critical mass of consumers (C9)
6 <sup>th</sup>	VI	• Lack of literacy/digital literacy (C4) • Universal unavailability of internet (C8)

### MICMAC Analysis

MICMAC (Matriced' Impacts Croise's Multiplication Appliquée a UN Classement) analysis determines the driving and the dependence power of challenges. In order to compute the driving and dependence power, we analyzed RM2 and the summation of rows and columns of RM2 was calculated (see Table 4). After this, we plotted the MICMAC analysis diagram for this work as shown in Figure 1. Based on



MICMAC analysis, the identified challenges were divided into four sets (see Figure 2). MICMAC analysis is a kind of structural analysis that allows evaluating the hierarchy of challenges in the various sets (autonomous, dependent, linkage and independent). These four sets are explained as below:

1. **Autonomous set:** This set of challenges involves low driving and low dependence power (lower left quadrant) and has relatively very less effect on the system. In this work, no challenge fall under this set. This signifies the fact that all the selected challenges have a significant influence on DFS.

2. **Dependent set:** This set of challenges involves low driving power and high dependence power (lower right quadrant) and occupies higher importance level in developed ISM based hierarchical model. Four challenges belong to the dependent set, which include - Risk of using digital services (C1), Safety and reliability issues (C2), Privacy issues (C3) and Lack of trust (C10). These challenges are considered as significant challenges due to their strong dependence on other challenges, and thus policymakers need to focus on all other challenges not only to remove the dependent challenges but also to improve DFS.

3. **Linkage set:** This set of challenges involves high driving and high dependence power (upper right quadrant); and occupies comparatively lower levels of importance in ISM based hierarchical model. Two challenges belong to the linkage set including – Technology and networking issues (C6) and Lack of keeping pace with new technologies (C7). These challenges are relatively less stable in nature and therefore, policymakers and practitioners need to be monitored continuously at each stage to promote DFS.

4. **Independent set:** This set of challenges involves high driving power and low dependence power (upper left quadrant); and constitutes the foundation of ISM based hierarchical model. There are four challenges that belong to this set including – Lack of literacy/digital literacy (C4), Lack of awareness and limited knowledge about DFS advantages (C5), Universal unavailability of Internet (C8) and Inability to reach a critical mass of consumers (C9). Policymakers and practitioners must address these key challenges by accomplishing desired objectives i.e. promotion of DFS. Challenges with higher driving power can easily influence other challenges as well and hence these challenges must be addressed on a priority basis.

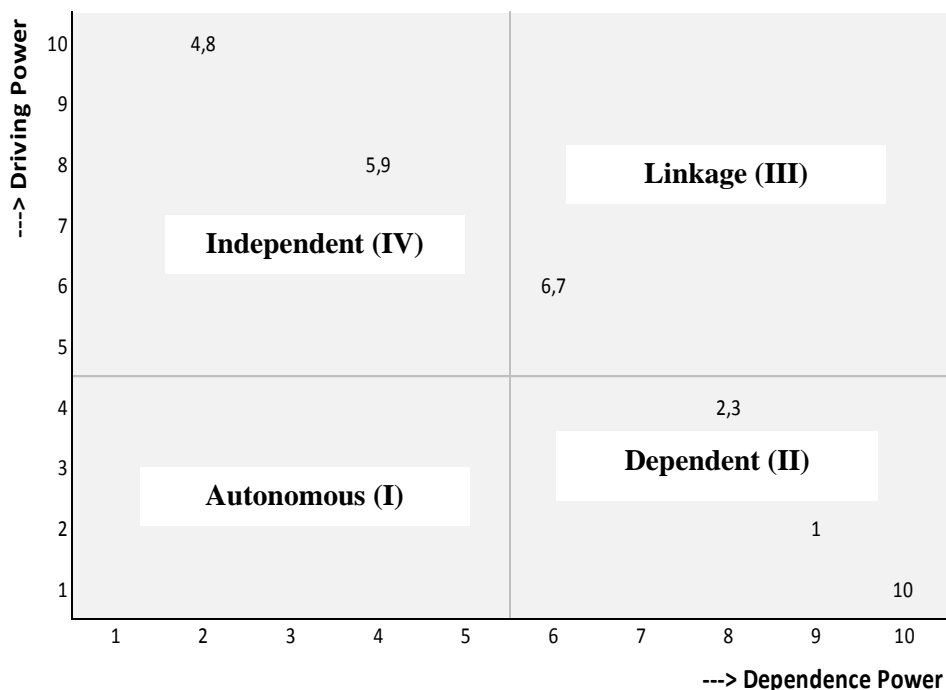


Figure 1. MICMAC Analysis

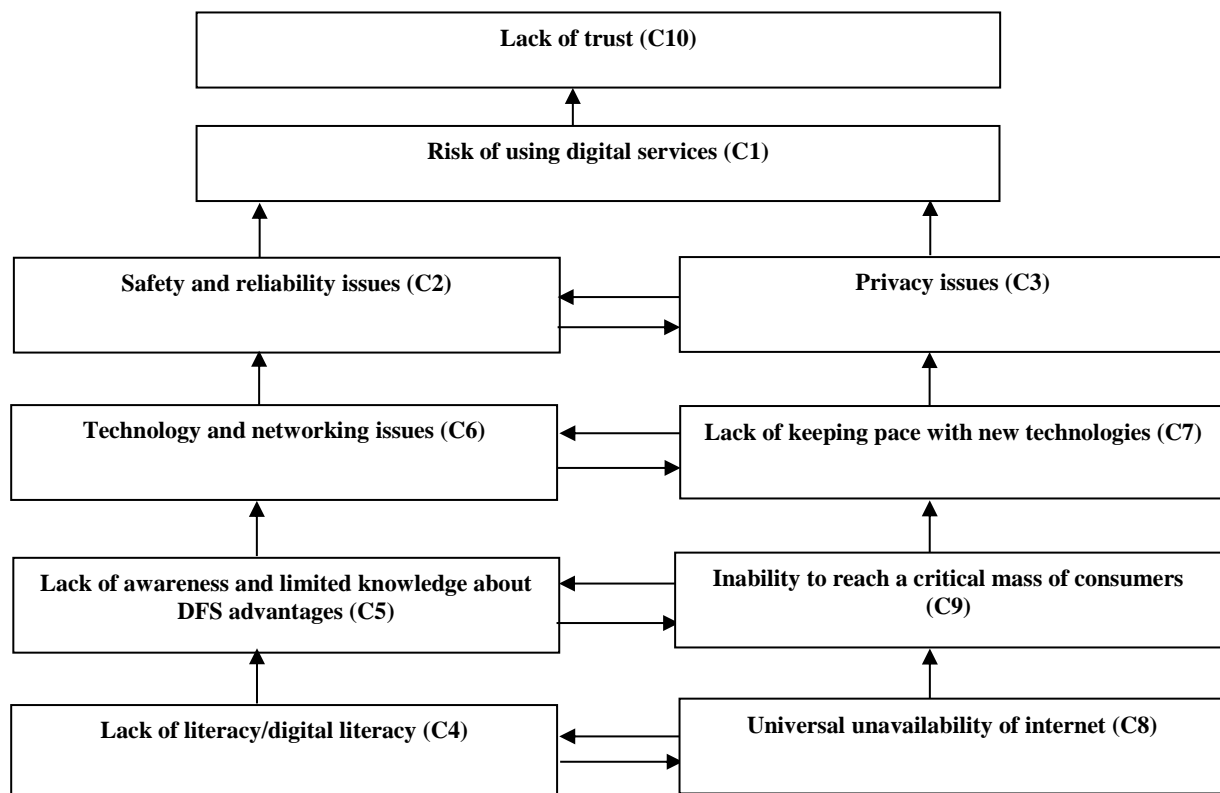
#### *Development of ISM Based Model*

Following final levels for the challenges of DFS (Table 6) and MICMAC analysis (Figure 1), ISM model was developed for the challenges of digital financial services (see Figure 2).

## Discussion

The suggested ISM based model (Figure 2) illustrates the contribution of the barriers ‘Lack of literacy/digital literacy (C4)’ and ‘Universal unavailability of internet (C8)’, which form the foundation of the hierarchical structure in the challenges of digital financial services in India. These challenges will affect each other bilaterally and act as key challenges of DFS in India. Dwivedi et al. (2016) suggested that a significantly large proportion of developing nations' population is still lacking digital literacy and resources such as Internet to promote DFS. These challenges would lead to ‘Lack of awareness and limited knowledge about DFS advantages (C5)’ and ‘Inability to reach a critical mass of consumers (C9)’, which will lead to ‘Lack of awareness and limited knowledge about DFS advantages (C5)’ and ‘Inability to reach a critical mass of consumers (C9)’. Shah and Dubhashi (2015) highlighted that mostly low income, unemployed and illiterate people, women and disabled are excluded from the formal financial services. The possible reasons could be the lack of banking knowledge and inefficiency of knowledge on banking products. Therefore, policymakers must focus in formulating or designing policies to aware society about DFS advantages and such policies must reach a critical mass of consumers.

The above-mentioned challenges will lead to ‘Technology and networking issues (C6)’ and ‘Lack of keeping pace with new technologies (C7)’. Notably, these challenges are related to technology awareness, adoption and infrastructure related issues to promote DFS. Henfridsson and Bygstad (2013) suggested that digitally enabled infrastructure is complex and time-consuming mechanism and therefore policymakers and practitioners must emphasize on these challenges after focusing earlier explored challenges.



**Figure 2. ISM Based Model**

Technology related issues will lead to ‘Safety and reliability issues (C2)’ and ‘Privacy issues (C3)’. Singhal and Kar (2015) suggested various security concerns related to e-banking and mobile banking i.e. monetary loss due to transaction error or bank account misuse. In mobile device, risks are more as device can be misplaced or stolen, and may result into exposure of confidential information. ‘Risk of using digital services (C1)’ will lead to ‘Lack of trust (C10)’. Therefore, an integrated approach should be adopted for achieving trust of people using DFS. People should be educated with information

relevant to usage of DFS and their security concerns. Policymakers and regulatory bodies must make a clear guideline in easy understandable format for the usage of DFS and related benefits.

### ***Implications of the Research***

The policymakers need to take challenges for identifying the prevalent challenges and linking these challenges by finding their contextual relationships. In the present research work, various key challenges of DFS have been identified and the contextual relationship among them is analyzed with the help of extensive survey of literature and guidance from experts. This study also elaborates the driving and dependence powers of each challenge. The policymakers and practitioners may benefit from this research by reducing these challenges to promote DFS effectively.

This study will also develop the understanding that some of the dominant challenges may be removed by implementation of a policy but it might increase the impact of some different challenges as a side effect. The policy makers/government organizations/regulators might get benefitted from the proposed ISM based hierarchical model for better understanding of interrelationships, hierarchical levels and interactions of the challenges. It will surely help them to develop a framework of action plan for minimizing or eradicating the challenges to certain extent to make the path easy for promoting DFS in India.

### **Conclusion**

In India, DFS is yet not popular due to various challenges. Therefore, the objectives of the current research were to recognize various key challenges of DFS; find contextual relationships between various challenges and develop a hierarchy of challenges to promote DFS. Ten key challenges, which act against the promotion of DFS in the country, are identified from the extensive review of literature. A decision team of experts was consulted to validate the literature findings. The contextual relationships among these key challenges were developed and ISM methodology has been applied for the analysis of these key challenges and to develop a hierarchy of these DFS challenges in India. Forty-five contextual relationships among key challenges have been identified using experts' inputs. Finally, MICMAC analysis has been performed to understand key challenges as per their driving power and dependence power. Finally, a hierarchy model has been developed based upon ISM methodology. "Lack of trust (C10)" has been found dependent top level and "Lack of literacy/digital literacy (C4)" and "Universal unavailability of internet (C8)" have been found independent bottom level key challenges for DFS in India.

The developed hierarchical structural model will enable policymakers, regulatory bodies and practitioners in prioritizing their efforts to reduce challenges related to DFS in India. This work has its own limitations, which can be taken as opportunities for future research. The work identifies key challenges of DFS in Indian context. Some other challenges have been missed out or remained unclassified due to the lack of exhaustive exploration of the literature. For future studies, a complete and exhaustive list of challenges in Indian context may be identified and more rigorously analyzed. In the current research, we have attempted to establish the contextual relationships between identified challenges using ISM methodology, which could be considered as the best possible way of using such approach as the interrelationships between these factors were not explored by any previous literature. Though the model is developed on basis of opinion of experts, the opinions of experts may be different or biased. In other words, although the sample size taken for this work is sufficient, it may not be a proper representation of the population under investigation because of cost and time related constraints. Therefore, the future research will also consider the opinion of some financial experts to balance the understanding of both digital and financial expertise. The data were gathered from 29 experts out of which 21 were from the same software development company. The future research should ensure that data are gathered from experts belonging to various software companies. Further, structural equation modeling (SEM) may be used to empirically test the model. The ISM methodology can also be further extended to the other similar but enhanced methodology such as TISM (Total Interpretive Structural Modeling) in the future work.

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