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Innovation of swift: how it works – gains & risks

MR. P. WILLIAM ROBERT[1], MS. SUBHASREE, K[2]

[1]Assistant Professor, Saveetha School of Management, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India
[2] MBA Student, Saveetha School of Management, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India
Email ID: williamrobert.ssm@saveetha.com, subhasreeksundaram@gmail.com

Abstract: The research paper titled "Innovation of SWIFT: How It Works – Gains & Risks" explores the various aspects of the interbank transfer worldwide including the gains and opportunities along with the risks involved in such transactions. Descriptive research is applied using Snowball sampling with 117 respondents. The tools used for the study are frequency analysis, mean analysis, factor analysis, independent t-test and ANOVA. It is found that six major factors which influence SWIFT are services, control, comprehensive, features, efficiency, attributes. There is no significant difference between SWIFT awareness of customers with respect to perception of SWIFT and is a significant difference between Gender with respect to the variable Service, Control and Attributes. Moreover there is a significant difference between interbank transfers with respect to Control. Also there is a significant difference between education with respect to efficiency and Income with respect to control, comprehensive and efficiency. Moreover there is a significant difference between occupation with respect to services, control and comprehensive.

Keywords: SWIFT, control, comprehensive, attributes efficiency

INTRODUCTION

Banks throughout the world needed a uniform, universal way to get money from one country to another. The Society for Worldwide Interbank Financial Telecommunication (SWIFT) network became that answer. SWIFT is an acronym that's often utilized in the world of financial transactions. SWIFT stands for the Society for Worldwide Interbank Financial Telecommunication. It's an organization that was founded in Brussels in 1973 to set some common processes and standards for financial transactions. Legally SWIFT, provides a network that permits financial institutions worldwide to send and receive information about financial transactions through a secure, standardized and reliable environment.

At its core, SWIFT is essentially just a bank-to-bank messaging system. It supplies a methodized language that institutions use to exchange payment instructions and other info to each other. As powerful as SWIFT is, it is only a messaging system – SWIFT does not hold any funds or securities, nor does it manage client accounts.SWIFT assigns each financial institution a unique code that has either eight characters or 11 characters. The code is interchangeably called the bank identifier code (BIC), SWIFT code, SWIFT ID, or ISO 9362 code.

As long as one's bank is affiliated with SWIFT, then the network can be used to securely communicate a payment order and get the customers money from one place to another. If the customer is sending money through SWIFT, it is often quite expensive, especially for smaller amounts of money.

Previously, our Team have published similar projects over the past three years Our research idea is based on the rich knowledge acquired by our peer teams across the university.(Danda, S and Chinnaswami, 2009; Narayanan, Kannan and Sreekumar, 2009; Priya S et al., 2009; Danda and Ravi, 2011; Neelakantan et al., 2011, 2013; Prasanna, Subbarao and Gutmann, 2011; Narayanan et al., 2012; Venugopalan et al., 2014; Krishnan and Chary, 2015; Neelakantan and Sharma, 2015; Ramesh et al., 2016; Manivannan, I., Ranganathan, S., Gopalakannan, S. et al., 2018; Dua et al., 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajeshkumar et al., 2019; Ramadurai et al., 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; A.C.Gomathi, S.R.Xavier Rajarathinam, A.Mohammed Sadiqc, Rajeshkumar, 2020)

Now we have begun to work on SWIFT. This study is conducted to get a detailed understanding about the benefits of SWIFT & the risks attached to it and how demographic factors influence the customers perception towards SWIFT.

LITERATURE REVIEW

(Lai, 2018) presented the understanding of Interbank Real-Time retail payment systems. The reality of the interbank payments along with the advancement of technology is studied to reveal how real-time payment systems

fit within the interbank retail payment landscape as well as the complexities and challenges in their implementations and design.
(Kirkpatrick et al., 2019) attempt to understand and analyse sanctions evasion and enforcement via virtual currencies.It was found that although sanctioned jurisdictions are thinking creatively about ways around SWIFT, the use of virtual currency to skirt sanctions presents certain challenges.
(Sahabat et al., 2019) aimed to identify the relationship between payment system network characteristics and financial system condition.The study showed a significant relationship between the characteristics of the network and the large-value payment transactions.
(Furfine, 2000) predict the patterns in the level and volatility of interbank payments match those found in the daily federal funds rate.Through this study the author reveals that volatility in bank payment flows generates funds rate volatility comparable to what is observed.
(Shafransky and Doudkin, 2006) have considered the clearing of interbank payments under a limited amount of money used by banks for the maintenance of the clearing process. The studies revealed that the corresponding discrete optimization problem is non-approximable and propose a fast heuristic for solving the problem.
(Chiu et al., 2020) aims to find out the relationship between interbank relationships. The study helps understand how monetary policy affects the network structure of the interbank market and its functioning.
(Bech and Monnet, 2016) provides insights on liquidity, trading volume, and rate dispersion in the interbank market – features largely absent from the canonical models in the tradition of Poole (1968) – and fits a number of stylized facts for the Eurosystem observed during the recent period of unconventional monetary policies.
(Blasques et al., 2018) introduce a dynamic network model of interbank lending and estimate the parameters by indirect inference using network statistics of the Dutch interbank market from February 2008 to April 2011.
(Li et al., 2010) introduces a network model of an interbank market based on interbank credit lending relationships. The research revealed that some typical structural features are identified in our interbank network, which are also proved to exist in real interbank networks.
(Krause and Giansante, 2012) attempt to understand Interbank lending and the spread of bank failures. They find the obvious result that the size of the bank initially failing is the dominant factor whether contagion occurs, but for the extent of its spread the characteristics of the network of interbank loans are most important.
(Dasgupta and Grover, 2019) have critically evaluated how SWIFT has become the monopoly in terms of the digital payment transaction industry.The study revealed that SWIFT enjoys a dominant position in the market.
(Cook and Soramäki, 2015) have analysed the global network by flows of a particular type of SWIFT message MT103, that represents a single customer credit transfer.It was revealed that the MT103 network is affected by global political and economic events.
(Dörry et al., 2018) explored the changing infrastructural architecture of global finance with the help of Global Production Networks (GPN's). An exploratory research was conducted to prove that SWIFT is the leading network as infrastructure intermediary & enjoys a dominant position in the Global market.
(Scott et al., 2017) examine the impact on bank performance of the adoption of SWIFT. The study revealed that SWIFT has large effects on profitability in the long-term; these profitability effects are greater for small than for large banks; and exhibits significant network effects on performance.
(Zhu, 2002) examines the function and operation flow of the electronic funds transfer process as well as its security control mechanism.It was found that there have been certain flaws that could lead to severe problems and have substantial financial implications.
(Scott and Zachariadis, 2012) traced the origins of the not for profit organisation- SWIFT. It was found that due to the network's prolific security and control mechanism, it is dominant over 210 countries and considered the best Interbank payment system.
(Qiu et al., 2019) explored Ripple which is based on blockchain technology and its effect on the traditional financial payment network system – SWIFT. It was revealed that even though in the short run SWIFT has a global dominance, in the long term, Ripple will succeed this traditional technology barring all the minor glitches.
(Sokolov et al., 2012) analyse a dataset received from the Reserve Bank of Australia that includes all interbank transactions made through SWIFT. The study revealed the imbalances in the banks' exchange settlement funds resulting from the daily flows of non-loan transactions are almost exactly counterbalanced by the flows of overnight loans.
(Kierkegaard, 2011) explored the various dimensions of the SWIFT agreement between the US and the European Union. The author concluded that by giving the US access to bulk data of EU citizens, the EU has undermined cherished values and violated human rights standards and principles.
(Mohammad et al., 2019) identified the applications and contributions of blockchain technology in finance in general, and to identify areas where the technology can make a larger impact in payment systems.The study revealed that Cryptocurrency is the first successful application of blockchain technology and can be used as the main fuel of the global money transfer network.

METHODOLOGY AND ANALYSIS

In this study, the primary data was collected through a self structured questionnaire. Questionnaire divided into various sections like demographic variables, and the factors related to SWIFT payment network, the risks and opportunities involved. It was employed to collect the primary data from 117 selected sample respondents from the general public based on snowball sampling technique. The tools used for analysis are Percentage Analysis, T-test, ANOVA, and Factor Analysis.

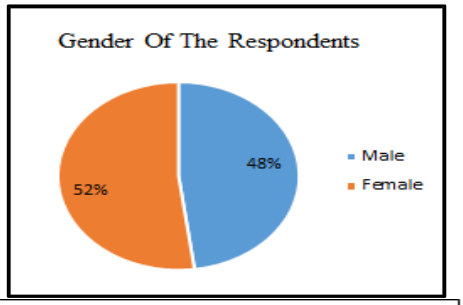

Figure 1: The Pie Chart depicts the percentage of gender of the sample. 45% of the respondents are male and 52% were female respondents.

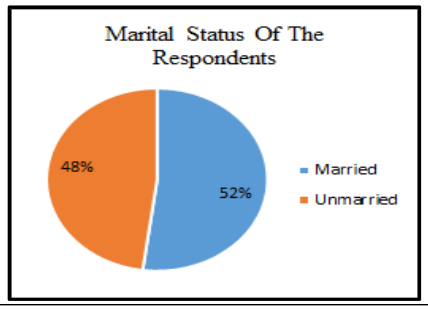

Figure 2: The Pie Chart depicts the percentage of Marital Status of the sample. 52% of the respondents are married and 48% were unmarried respondents.

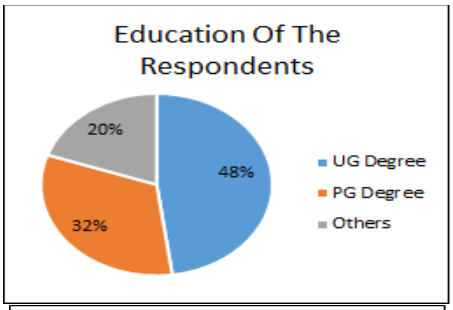

Figure 3: The Pie Chart depicts the percentage of Education of the sample. 48% of the respondents are Undergraduates, 32% were Post graduate respondents and 20% held other degrees.

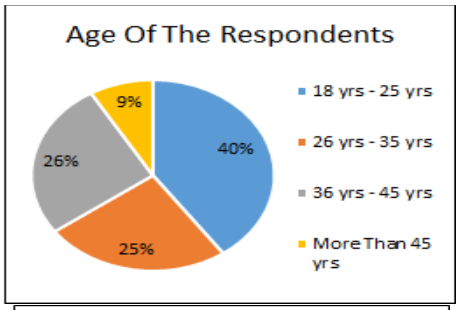

Figure 4: The Pie Chart depicts the percentage of Age of the sample. 40% of the respondents are between the age group 18 yrs – 25 yrs, 25% respondents belonged to 26 yrs – 35 yrs category, 26% respondents were between the age group 36 yrs – 45 yrs and 9% respondents were above the age of 45.

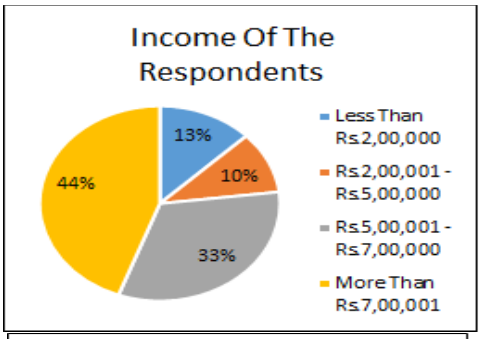

Figure 5: The Pie Chart depicts the percentage of Income of the sample. 13% of the respondents earn less than Rs. 2,00,000, 10% respondents fall between the income category Rs. 2,00,001 – Rs. 5,00,000, 33% respondents were between the income group Rs. 5,00,001 – Rs. 7,00,000 and 44% respondents earned above the income of Rs. 7,00,000.

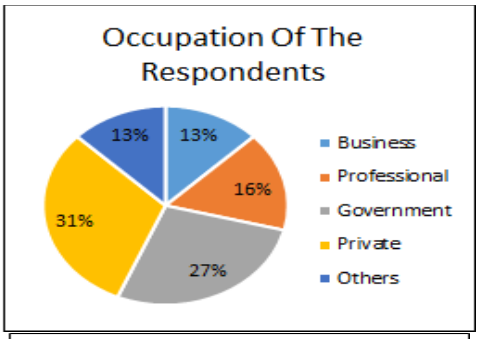

Figure 6: The Pie Chart depicts the percentage of Occupation of the sample. 13% of the respondents engaged in business, 16% respondents were professionals, 27% respondents were Government employees and 31% respondents worked in private sector and 13% respondents belonged to other occupation.

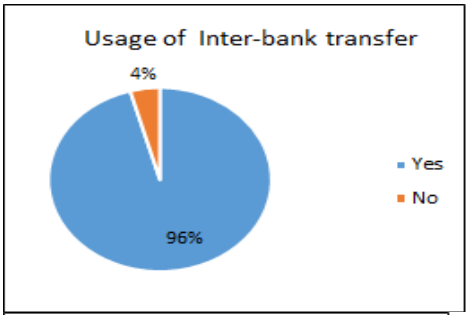

Figure 7: The Pie Chart depicts the percentage of Usage of Interbank transfer of the sample. 96% of the respondents are have used and 4% respondents have not used interbank transfer facility.

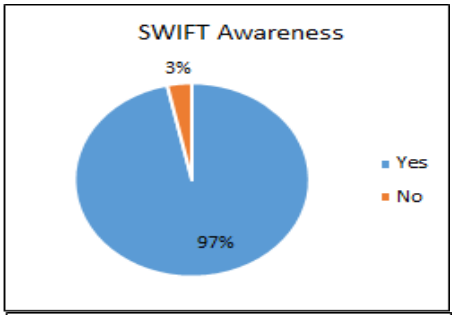

Figure 8: The Pie Chart depicts the percentage of SWIFT awareness of the sample. 97% of the respondents are aware and 3% were unaware about SWIFT.

Table 1: Perception of Customers towards SWIFT

S.No	Perception of Customers towards SWIFT	Mean	Rank
1	SWIFT is basically a network to bank messaging system (Messaging System)	4.52	1
2	SWIFT addresses the issues related to interbank payments (Interbank Payments)	4.21	2
3	SWIFTprovides a reliable and scalable network for smooth movement of messages (Reliability)	4.17	3
4	Cyber security infrastructure is still a threat which comes along with using the SWIFT system (Cybersecurity)	4.15	4
5	SWIFT enables the clients to get a dynamic, real-time view of monitoring the messages, activities, trade-flow and reporting (Dynamic)	4.15	5
6	SWIFT payment controls provides a comprehensive solution with both alerting & reporting capabilities (Comprehensive)	4.15	6
7	Society for Worldwide Interbank Financial Telecommunication SWIFT plays a key role in realizing end to end process efficiencies rather than just reducing transactional messages (Efficiency)	4.11	7
8	SWIFT provides a secure network that allows financial institutions to send and receive information about financial transactions (Security)	4.10	8
9	SWIFT has become the industry standard for syntax in financial messages (Syntax)	4.09	9
10	SWIFT payment controls helps you detect and prevent high risk payments & mitigates business disruption (Control)	4.08	10
11	SWIFT is easy to implement, simple to use & ideally suited to the needs of the user (Simple)	3.85	11
12	SWIFT has a dominant position in the global processing of transactional messages (Dominance)	3.77	12
13	SWIFT offers multiple products and services which enables it's end clients to send & receive transactional messages (Services)	3.75	13
14	SWIFT system transfers pass through multiple banks before reaching their final destination, making them time-consuming, expensive and lacks transparency (Expensive)	3.61	14
15	SWIFT connections enable access to a variety of applications (Applications)	3.60	15

The Mean Score and rank are displayed in table 2.It shows variable "Messaging System" includes the highest mean score of 4.52, followed by Interbank Payment (4.21), Reliability (4.17), Cybersecurity (4.15), Dynamic (4.15), Comprehensive (4.15), Efficiency (4.11), Security (4.10), Syntax (4.09), Control (4.08), Simple (3.85), Dominance (3.77), Services (3.75), Expensive (3.61) and Applications (3.60). All the mean scores are lies between 3 &5. It concludes that respondents are agreeing towards all the mentioned factors.

Table 2: Data Sufficiency and Variance

S.NO	KMO	Factors	Total	% of Variance	Cumulative %
1		Component 1	2.227	14.846	14.846
2		Component 2	2.048	13.654	28.501

3	0.559	Component 3	1.972	13.144	41.645
4		Component 4	1.704	11.360	53.004
5		Component 5	1.664	11.092	64.097
6		Component 6	1.558	10.388	74.485

Table no 2 explains the variance of the components. The data sufficiency for doing factor analysis is measured by KMO. In this case, the value is greater than 0.5. It is clear from the table that variables have been grouped into 6 factors. There are a total of six components with cumulative percent of 74.485. Moreover, 15 parameters are clubbed into six factors.

Table 3: Factor Loadings

Perception towards SWIFT Payment Network	**Components**					
	1	**2**	**3**	**4**	**5**	**6**
Services	.768					
Dominance	.762					
Applications	.743					
Control		.854				
Security		.727				
Dynamic		.532				
Comprehensive			.807			
Expensive			.655			
Simple			.549			
Interbank Payment				.827		
Messaging System				.593		
Reliable				.622		
Efficient					.872	
Syntax						.817
Cybersecurity						.761

Table 3 shows factor loadings of each variable. Parameters of Services, Dominance & Applications form factor. Factor 2 contains Security, Control and Dynamic. Factor 3 contains Comprehensive, Expensive & Simple. Factor 4 takes Interbank Payment, Messaging System and Reliable. Factor 5 contains the factor Efficient. Syntax & Cybersecurity listed in factor 6.

Table 4: Demographic Profile and Perception towards SWIFT

S.No	**Perception Towards SWIFT**	**Gender T-value**	**Marital Status T-value**	**Interbank Transfer T-value**	**SWIFT Awareness T-value**
SERVICES					
1.	Services	0.198	1.620	0.982	0.614
2.	Dominance	3.712***	1.909	1.246	0.690
3.	Application	2.676***	0.213	0.517	0.341
CONTROL					
4.	Control	.0555	0.555	1.277	2.153**
5.	Security	2.036**	1.576	2.651***	0.335
6.	Dynamic	2.383**	1.804**	1.869**	1.130
COMPREHENSIVE					
7.	Comprehensive	1.035	1.035	1.412	2.387**
8.	Expensive	1.300	0.600	0.460	1.177
9.	Simple	2.408**	2.804***	0.142	1.415
FEATURES					
10.	Interbank Payment	0.378	1.667**	1.280	3.544**
11.	Messaging System	0.269	1.281	4.071***	1.949
12.	Reliable	4.359***	1.458	1.195	2.708***
EFFICIENCY					
13.	Efficient	0.252	0.252	3.874***	3.200***
ATTRIBUTES					
14.	Syntax	2.646***	1.112	2.980***	3.277**
15.	Cybersecurity	2.715***	0.032	1.012	0.378

** 5 % level of significance
*** 1 % level of significance
Table 4 shows that almost all the T-values are insignificant. But there is a significant difference between Gender with respect to the variable Service, Control and Attributes. Moreover there is a significant difference between interbank transfers with respect to Control.

Table 5: Demographic Profile and Perception towards SWIFT

S.No	Perception Towards SWIFT	Age F-value	Education F-value	Income F-value	Occupation F-Value
SERVICES					
1.	Services	1.253	0.745	1.770	2.799**
2.	Dominance	1.733	4.205**	9.553***	6.381***
3.	Application	3.626**	1.837	1.738	0.933
CONTROL					
4.	Control	2.067	2.860	4.000**	5.009***
5.	Security	3.451**	1.272	7.347***	2.271
6.	Dynamic	1.119	0.410	2.407	4.623***
COMPREHENSIVE					
7.	Comprehensive	1.111	0.213	2.041	9.168***
8.	Expensive	1.072	1.655	6.925***	8.097***
9.	Simple	4.732***	2.370**	11.449***	12.666***
FEATURES					
10.	Interbank Payment	2.136	0.008	2.057	2.327
11.	Messaging System	0.385	2.535**	2.192	4.501***
12.	Reliable	11.758***	2.022	3.034**	2.297
EFFICIENCY					
13.	Efficient	0.620	3.095**	3.781**	2.558**
ATTRIBUTES					
14.	Syntax	0.665	7.462**	3.535**	0.885
15.	Cybersecurity	1.341	0.146	1.274	4.918***

** 5 % level of significance
*** 1 % level of significance
Table 6 shows that almost all the F values are insignificant. The study between the customers profile and perception towards SWIFT is insignificant. But there is a significant difference between education with respect to efficiency and Income with respect to control, comprehensive and efficiency. Moreover there is a significant difference between occupation with respect to services, control and comprehensive.

DISCUSSIONS

Most of the respondents feel that SWIFT is just a messaging network. This shows that the awareness about the actual working of SWIFT is very less. People need to be made aware about the same. There are various other Payment networks that are being developed and therefore knowing about the others is also important so that the most efficient one can be chosen. The different types of products and services offered by SWIFT is still not known to many. Therefore one needs to understand that too. Since the process of SWIFT is extremely elaborate, it makes it time consuming and expensive. Hence the management needs to find a way to make the process simple and cost effective so that this network could be accessed by many people. SWIFT networks still have various cybersecurity issues that have to be addressed in order to make this network a dominant one.

CONCLUSION

It is evident that SWIFT is one of the most dominant payment networks in the world. The respondents do have knowledge about the network but only to an extent that SWIFT is a messaging system.It was found that, most of the respondents have done interbank payments and are aware of SWIFT. There were 15 parameters on which the respondents were expected to give their perception for which factor analysis was conducted and the number of parameters was later reduced to six factors such as services, control, comprehensive, features, efficiency and attributes.Lastly, since the growth of technology is many fold, one needs to address the issues relating to cybersecurity because the incidents relating to the Bangladesh Heist is an example that SWIFT network still has a lot of holes in its ship that needs to be filled immediately.

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