

TECHNOLOGICAL EXPANSION IN E-BANKING PAYMENTS: A COMPARATIVE STUDY OF STATE BANK OF INDIA AND KARNATAKA BANK LTD.

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Abstract

*In the global context of India's banking and financial system has seen some major financial innovations in the past decade as well as steps to promote technological and digitalization of e- banking payment services. The various innovations in banking and financial sector such as, ECS, RTGS, EFT, NEFT, ATM, Debit & Credit Cards, payments of utility bills, fund transfers, internet banking, telephone banking, mobile banking, issue of free cheque books, traveler's cheques and many more value added services etc. The present study focused on comparative study of E-banking payments between state bank of India and Karnataka bank Ltd. The main objectives of the study is to **highlight the theoretical framework of digitalization and technological innovation in banking section in general and to examine the volume of national electronic fund transfer (NEFT) transactions in State Bank of India and Karnataka Bank Ltd. And also to assess the volume and value of real time gross settlement (RTGS) transactions in State Bank of India and Karnataka Bank Ltd. In these paper data has been collected from secondary sources and for the purposes of analysis or to measure adequacy of data applied Independent sample T-Test, descriptive statistics and one way ANOVAs test, therefore this study finds out there is no significant difference between volume and value of E-banking payment (NEFT and RTGS) transactions towards state bank of India and Karnataka bank Ltd.***

Key Words: E- banking Payment, NEFT, RTGS, Technological Innovation.

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Introduction

Banking sector in India has seen a number of changes. Most of the banks have begun to take an innovative approach towards banking with the objective of creating more value for customers. Information technology has given rise to new innovations in the product designing and their delivery in the banking and finance industries. Technology offers a chance for banks to build new systems that address a wide range of customer needs including many that may not be imaginable today. Financial innovation associated with technological change totally changed the banking philosophy and that is further tuned by the competition in the banking industry. Challenging business environment within the banking system create more innovation in the fields of product, process and market. Today, we have electronic payment system along with currency notes .Financial sector is moving towards a scenario, where it can have new instruments along with liquidity and safety.

The present study focused on comparative study of digitalization of e-banking payments towards State Bank of India and Karnataka bank Ltd. SBM was established in the year 1913 as Bank of India Ltd. under the patronage of the Govt. of India, Subsequently, in March 1960, the Bank became an Associate of State Bank of India. State Bank of India holds 90% of shares. The Bank's shares are listed in Bangalore, Chennai and Mumbai stock exchanges. And the Karnataka bank was established in 1964 is a major banking institution based in the coastal city of Mangalore in Karnataka, India. The Reserve Bank of India has designated Karnataka Bank as an A1+-class scheduled commercial bank. At present SBI provides better good E-banking payment services to the customers compared to the Karnataka bank Ltd, The following table shows that major events of e-banking payments as follows.

Important events in the evolution of E-banking payment systems in India:

Year	Events of E-banking Payments
1980s	Arrival of card- based payments- debit card, credit card.
1990s	Introduction of Electronic Clearing Service (ECS).
2000	Introduction of Electronic Funds Transfer/ Special (EFT).
2001	Introduction of Internet Banking.
2004	Introduction of Real Time Gross Settlement (RTGS).
2005	Introduction of NEFT (National Electronic Funds Transfer).
2008	Introduction of CTS (Cheque Truncation System).
2009	Introduction of Online Money Transfer
2011	Introduction of PC banking services
2012	Introduction of Mobile banking
2015	Introduction of Pay Time Money (PTM)

Source: Aruna R. Shet (2015).

The Indian payment system, which is primarily cash dominant, is now at a faster pace transforming from paper to electronic. The share of electronic payments in non-cash payments has shown an upward trend. The E- payment system primarily comprises two systems as follows:

Real time gross settlement (RTGSs)

Real-time gross settlement systems (RTGS) are specialist funds transfer systems where the transfer of money or securities takes place from one bank to another on a "real time" and on a "gross" basis. Settlement in "real time" means a payment transaction is not subjected to any waiting period, with transactions being settled as soon as they are processed. "Gross settlement" means the transaction is settled on one-to-one basis without bundling or netting with any other transaction. "Settlement" means that once processed, payments are final and irrevocable. RTGS systems are typically used for high-value transactions that require and receive immediate clearing. In some countries the RTGS systems may be the only way to get same day cleared funds and so may be used when payments need to be settled urgently. However, most regular payments would not use a RTGS system, but instead would use a national payment system or network that allows participants to batch and net payments. Real Time Gross Settlement

system is a system through which electronics instructions can be given by banks to transfer funds from one account to the account of another bank. This system was introduced in India Since March 2004.

National Electronic fund Transfers (EFTs):

National Electronic Funds Transfer (NEFT) is one of the most prominent electronic funds transfer system of India, started in November 2005. NEFT is a facility provided to bank customers to enable them to transfer funds easily and securely on a one-to-one basis. It is done via electronic messages. This is not on real-time basis like RTGS (Real Time Gross Settlement). This is a "net" transfer facility which is executed in hourly batches resulting in a time lag. NEFT facilities are available in 30,000 bank branches all over the country and work on a batch mode. RBI explains this scheme as "National Electronic Funds Transfer (NEFT) is a nation-wide payment system facilitating one-to-one funds transfer. Under this Scheme, individuals, firms and corporate can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the Scheme." NEFT has gained popularity due to its saving on time and the ease with which the transactions can be concluded, This reflects from the fact that 42% of all electronic transactions in the 2008 financial year were NEFT transactions.

Review of Literature

The following are the important reviews on technological innovation towards E-banking payments in Indian banking sector.

Berger (2011), this study was highlighted on the economic effects of technological progress: evidence from the banking Industry. This paper examines technological progress and its effects in the banking industry. Banks are intensive users of both IT and financial technologies, and have a wealth of data available that may be helpful for the general understanding of the effects of technological change. The research find out improvements in costs and lending capacity due to improvements in "back-office" technologies, as well as consumer benefits from improved "front-office" technologies. The research also suggests significant overall productivity increases in terms of improved quality and variety of banking services to the customers.

Sreelatha (2012), this study was undertaken on role of technology in Indian banking sector. This paper mainly focused on nationalization banks in India, this sector has been growing without leaps and bounces and catering to the needs of various segments of the society. These studies mainly find out, in recent times, the banking sector has been making rapid strides by using information technology as a platform and endeavoring to scale higher heights. An attempt has been made in this paper to examine various innovative instruments that have been introduced by banks in recent times.

Haukioja (2013), this study was focused on new economy and its challenge to financial intermediation and banking. This study focused on financial intermediation and banking are under constant structural change due to new technologies and deregulation. Despite that, the basic functions of banks do not change. However, in the changing environment banks have to manage the potential threat of disintermediation, that is structural change from direct to indirect finance. Finally this study concludes on technological progress and knowledge-based innovations have more important role in economic growth and development for ever.

Malik (2014), this study was highlighted on technological innovations in Indian banking sector: changed face of banking. The research paper focuses on how the technology has transformed the face of banking in India. India's banking system has seen some major financial innovations in the past decades which lead to tremendous improvements in banking services and operations. This paper also highlights the benefits and challenges of changing banking trends innovations in banking and financial sector are ECS, RTGS, EFT, NEFT, ATM, Retail banking, Debit and Credit cards, free advisory services, online banking, mobile banking and many more value added products and services.

Aruna (2015), this study was conducted on technological innovation in Indian banking sector. This paper indicates the benefits of changing banking trends most of the banks have begun to take an innovative approach towards banking with the objective of creating more value for customers in the banks. Today we have electronic payment system along with currency notes. India's financial sector is moving towards a scenario,

where it can have new instruments along with liquidity and safety. Arrival of card, introduction of Electronic Clearing Service (ECS), introduction of electronic funds transfer, real time gross settlement (RTGS), mobile banking, online banking are the various innovations in banking. Banks are investing heavily in adoption of these innovations.

Thakare (2016), this study was emphasized on technological innovation in Indian banking sector. The research paper focuses on how the technology has transformed the face of banking in India. India's banking system has seen some major financial innovations in the past decades which lead to tremendous improvements in banking services and operations. The various innovations in banking and financial sector are ECS, RTGS, EFT, NEFT, ATM, Retail banking, Debit and Credit cards, free advisory services, online banking, mobile banking and many more value added products and services. This paper also highlights the benefits and challenges of changing banking trends. Banks are investing heavily in adoption of these innovations in Indian banking sectors.

Objectives of the Study

The major objectives of the study are as follows

1. To highlight the theoretical framework of digitalization and technological innovation in banking section;
2. To examine the volume of National Electronic Fund Transfer (NEFT) transactions in State Bank of India and Karnataka Bank Ltd.;
3. To analyze the value of National Electronic Fund Transfers (NEFT) transactions in State Bank of India and Karnataka Bank Ltd.
4. To assess the volume of real time gross settlement (RTGS) transactions in State Bank of India and Karnataka Bank Ltd.
5. To study the value of real time gross settlement (RTGS) transactions in State Bank of India and Karnataka Bank Ltd.
6. To offer findings and suggestions in the light of the study.

Research Methodology

Research is considered as roadmap of unfamiliar to the familiar contexts. Methodology is the way to solve the research problem systematically. The present study is purely based on data gathered from secondary sources. In this study, we analyzed comparative study of selected one public sector and one private sector bank such as, State bank of India and Karnataka bank Ltd. The sources of secondary data were collected from Reports on various issues of reserve bank of India (RBI). The information for this study is gathered for the time of 2009-10 to 2015-16. And also various national and international journals, periodic publications, working papers, books, articles, thesis, dissertation work on E-banking of various universities etc is referred. For the purpose data analyze applied group or descriptive statistics, independent sample T-test and one way ANOVAs test to know the significant relationship between two variables and also to prove the hypotheses of the study.

Hypotheses

The study is based on the following hypotheses.

H1: There is no significant difference between volumes of NEFT transactions in SBI & KBL.

H2: There is no significant difference between values of NEFT transaction in SBI & KBL.

H3: There is no significant relationship between volumes of RTGS transactions in SBI & KBL.

H4: There is no significant variation between values of RTGS transaction in SBI & KBL.

Analysis and interpretation

Volume of Transactions in National Electronic Fund Transfer (NEFT):

Table No.1 represents volume of E-banking payments through national electronic fund transfer (NEFT) in state bank of India and Karnataka bank Ltd. In the context of state bank of India, the overall volume of NEFT inward and out ward transaction numbering, 40,03,999 and 33,27,712 respectively, out of that the highest volume of NEFT outward and inward transaction were found numbering, 17,26,897 and 10,49,296 in 2015-16

respectively. As against the lowest volume of in outward and inward NEFT transaction were found numbering, 40,456 and 72,815 in 2009-10 respectively. In the context of Karnataka bank Ltd. The overall volume of NEFT inward and out ward transaction numbering, 10,56,420 and 22,90,907 respectively, out of that the highest volume of NEFT outward and inward transaction were found numbering, 3,03,121 and 6,98,640 in 2015-16 respectively. As against the lowest volume of in outward and inward NEFT transaction were found numbering, 25,821 and 46,936 in 2009-10 respectively. To conclude, the State Bank of India. Statistical information shows that the highest number of NEFT transaction compared to Karnataka Bank Ltd. It indicates the NEFT E-banking payment services are better in State Bank of India compared to KBL.

Table No. 1
Volume of Transactions in National Electronic Fund Transfer (NEFT)

Year	State Bank of India		Karnataka Bank	
	Out ward No of Transactions	Inward No of Transactions	Out ward No of Transactions	Inward No of Transactions
2009-10	40456	72815	25821	46936
2010-11	76171	142438	61589	97094
2011-12	235278	271410	90561	182968
2012-13	138219	458597	140271	291626
2013-14	686161	556222	194131	433746
2014-15	1100817	776934	240926	539897
2015-16	1726897	1049296	303121	698640
Total	4003999	3327712	1056420	2290907
<i>Mean</i>	55.72	47.52	51.15	43.21
<i>S.D</i>	63.98	53.12	32.27	24.75
<i>Independent Sample T-Test</i>	<i>T=1.732</i> <i>P= 0.000</i> (H0 Accepted)		<i>T=2.099</i> <i>P=0.002</i> (H0 Accepted)	

Source: Trends and Progress Report of RBI – Various issues.

Independent sample T-test depicts that to test the significant difference between the mean differences among volume of e-banking payment through NEFT in SBI. The highest mean and standard deviation were found in outward NEFT transaction category around 55.72 and 63.98 respectively. The calculated P value (Sig 2-tailed) is 0.000, which is less than the Alpha value of 0.05, which indicated that the stated null hypothesis to be accepted. Further to test the significant difference between the mean differences among volume of e-banking payment through NEFT in Karnataka bank Ltd. The

highest mean and standard deviation were found in outward NEFT transaction category around 51.12 and 32.27 respectively. The calculated P value (Sig 2-tailed) is 0.002, which is less than the Alpha value of 0.05, which indicated that the stated null hypothesis to be accepted.

Value of Transaction in National Electronic Fund Transfer (NEFT)

Table No.2 depicts that value of E-banking payments through national electronic fund transfer (NEFT) in state bank of India and Karnataka bank Ltd. In the context of State Bank of India. The overall value of NEFT outward and inward E- banking payments were found to be Rs. 1,03,384.4 million and Rs. 1, 47,237.4 million respectively, out of that the highest value of NEFT outward and inward E- banking payments were found Rs. 33,808.99 million and Rs. 48, 437.18 million in 2015-16 respectively. As against the lowest value of NEFT outward and inward E- banking payments were found Rs. 55,660.85 million and Rs. 97,587.69million in 2009-10 respectively. In the context of Karnataka bank Ltd. The overall value of NEFT outward and inward E- banking payments were found to be Rs. 78.34 million in 2009-10 respectively. In the context of Karnataka bank Ltd. It indicates the NEFT e-banking payment service is better in State Bank of India compared to KBL.

Table No.2
Value of Transaction in National Electronic Fund Transfer (NEFT)

Year	State Bank of India		Karnataka Bank Ltd.	
	Value of outward Transactions	Value of Inward Transactions	Value of outward Transactions	Value of Inward Transactions
2009-10	145.08	268.08	78.34	187.22
2010-11	471.64	775.05	263.26	1459.14
2011-12	7643.83	14117.67	4128.36	8160.16
2012-13	13351.21	17541.58	7129.55	11938.28
2013-14	18557.40	25422.58	10414.98	17672.78
2014-15	29406.25	40675.24	15211.72	22670.47
2015-16	33808.99	48437.18	18434.64	35499.64
Total	103384.4	147237.4	55660.85	97587.69
<i>Mean</i>	14.84	13.30	17.51	19.31
<i>S.D</i>	21.10	18.51	13.94	18.27
<i>Independent Sample T-Test</i>	<i>T=2.001</i> <i>P=0.001</i> (H0 Accepted)		<i>T=3.692</i> <i>P=0.018</i> (H0 Accepted)	

Source: Trends and Progress Report of RBI – Various issues.

Independent sample T-test shows, that to test the significant difference between the mean differences among value of e-banking payment through NEFT in SBI. The highest mean and standard deviation were found in outward NEFT transaction category around 14.84 and 21.10 respectively. The calculated P value (Sig 2-tailed) is 0.001, which is less than the Alpha Value of 0.05, which indicated that the stated null hypothesis to be accepted. Further to test the significant difference between the mean differences among volume of e-banking payment through NEFT in Karnataka bank Ltd. The highest mean and standard deviation were found in inward NEFT transaction category around 19.31 and 18.27 respectively. The calculated P value (Sig 2-tailed) is 0.018, which is less than the Alpha Value of 0.05, which indicated that the stated null hypothesis is accepted.

Volume of Transactions in Real Time Gross Settlement (RTGS)

Table No.3 indicates the volume of E-banking payments through real time gross settlement in state bank of India and Karnataka bank Ltd. In the context of State Bank of India, the overall volume of RTGS inward and out ward transaction numbering, 3,70,267 and 2,80,286 respectively, out of that the highest volume of RTGS outward and inward transaction were found numbering, 72,500 and 51,483 in 2015-16 respectively. As against the lowest volume of in outward and inward RTGS transaction were found numbering, 37,209 and 27,754 in 2009-10 respectively. In the context of Karnataka bank Ltd. The overall volume of RTGS inward and out ward transaction numbering, 3,17,084 and 2,17,412 respectively, out of that the highest volume of RTGS outward and inward transaction were found numbering, 71,926 and 48,703 in 2015-16 respectively. As against the lowest volume of in outward and inward RTGS transaction were found numbering, 24,185 and 16,463 in 2009-10 respectively. To conclude that, the state bank of India statistical information shows the highest number of RTGS transaction compared to Karnataka bank Ltd. It indicates the RTGS E-banking payment services are better in state bank of India compared to KBL.

Table No.3
Volume of Transactions in Real Time Gross Settlement (RTGS)

Year	State Bank of India		Karnataka Bank Ltd.	
	Out ward volume of Transactions	Inward volume of Transactions	Out ward volume of Transactions	Inward volume of Transactions
2009-10	37209	27754	24185	16463
2010-11	39825	32962	29521	20773
2011-12	45387	37224	36234	25686
2012-13	53676	41339	45456	31638
2013-14	62283	46164	54680	37527
2014-15	59387	43360	55082	36622
2015-16	72500	51483	71926	48703
Total	370267	280286	317084	217412
<i>Mean</i>	52.89	21.83	45.29	27.73
<i>S.D</i>	31.84	13.69	16.68	11.23
<i>One Way ANOVA</i>	F=1.821 P=0.014 (H0 Accepted)		F=2.927 P=0.011 (H0 Accepted)	

Source: Trends and Progress Report of RBI – Various issues.

One way ANOVA, represents, that to test the significant difference between the mean differences among volume of e-banking payment through RTGS in SBI. The highest mean and standard deviation were found in outward RTGS transaction category around 52.89 and 31.84 respectively. The calculated P value (Sig 2-tailed) is 0.014, which is more than the Alpha Value of 0.05, which indicated that the stated null hypothesis to be rejected and alternative hypothesis is accepted. Further to test the significant difference between the mean differences among volume of e-banking payment through RTGS in Karnataka bank Ltd. The highest mean and standard deviation were found in outward RTGS transaction category around 45.29 and 16.68 respectively. The calculated P value (Sig 2-tailed) is 0.011, which is more than the Alpha Value of 0.05, which indicated that the stated null hypothesis to be rejected and alternative hypothesis is accepted.

1. Value of Transaction in Real Time Gross Settlement (RTGS)

Table No.4 shows the value of E-banking payments through real time gross settlement (RTGS) in state bank of India and Karnataka bank Ltd. In the context of State Bank of India. The overall value of RTGS outward and inward E- banking payments were found to be Rs. 1452.34 million and 1,399.58 million respectively, out of that the highest value

of RTGS outward and inward E- banking payments were found RS.269.46 million and Rs.264.21 million in 2011-12 respectively. As against the lowest value of RTGS outward and inward E- banking payments were found Rs.115.58 million and Rs.128.12 million in 2012-13 respectively. In the context of Karnataka bank Ltd.The overall value of RTGS outward and inward E- banking payments were found to be Rs.559.08 million and Rs. 501.47 million respectively,out of that the highest value of RTGS outward and inward E- banking payments were found Rs.125.80 million and Rs.111.35 million in 2015-16 respectively. As against the lowest value of RTGS outward and inward e-banking payments were found Rs.45.18 million and Rs. 43.94 million in 2009-10 respectively. To conclude that, the state bank of India statistical information shows the highest Amount of RTGS inward and outward E- payment transaction compared to Karnataka bank Ltd. It indicates the RTGS e-banking payment service is better in State Bank of India compared to KBL.

Table No.4
Value of Transaction in Real Time Gross Settlement (RTGS)

Year	State Bank of India		Karnataka Bank	
	Value of outward Transactions	Value of Inward Transactions	Value of outward Transactions	Value of Inward Transactions
2009-10	186.57	192.32	45.18	43.94
2010-11	257.04	252.60	55.73	54.18
2011-12	269.46	264.21	74.50	66.99
2012-13	115.58	128.12	81.45	71.72
2013-14	189.78	180.76	86.41	74.44
2014-15	180.01	164.38	90.01	78.85
2015-16	253.90	217.19	125.80	111.35
Total	1452.34	1399.58	559.08	501.47
<i>Mean</i>	27.48	19.99	79.86	71.63
<i>S.D</i>	48.38	32.16	26.05	21.33
One Way ANOVA	F=4.074 P=0.000 (H0 Accepted)		F=3.024 P=0.004 (H0 Accepted)	

Source: Trends and Progress Report of RBI – Various issues.

One way ANOVA, represents, that to test the significant difference between the mean differences among value of e-banking payment through RTGS in SBI. The highest mean and standard deviation were found in outward RTGS transaction category around 27.48

and 48.38 respectively. The calculated P value (Sig 2-tailed) is 0.000, which is less than the Alpha Value of 0.05, which indicated that the stated null hypothesis to be accepted and alternative hypothesis is rejected. Further to test the significant difference between the mean differences among value of e-banking payment through RTGS in Karnataka bank Ltd. The highest mean and standard deviation were found in outward RTGS transaction category around 79.86 and 26.05 respectively. The calculated P value (Sig 2-tailed) is 0.004, which is less than the Alpha Value of 0.05, which indicated that the stated null hypothesis to be accepted and alternative hypothesis is rejected.

Findings of the Study:

The following are the major findings of the study:

- In the context of SBI, the overall volume of NEFT inward and out ward transaction numbering, 40,03,999 and 33,27,712 respectively.
- Out of that the highest volume of NEFT outward and inward transaction were found numbering, 17,26,897 and 10,49,296 in 2015-16 respectively.
- In the context of Karnataka bank Ltd. The overall volume of NEFT inward and out ward transaction numbering, 10,56,420 and 22,90,907 respectively,
- In the context of state bank of India. The overall value of NEFT outward and inward E- banking payments were found to be Rs. 1, 03,384.4 million and Rs. 1, 47,237.4 million respectively, .
- In the context of Karnataka bank Ltd. The overall value of NEFT outward and inward E- banking payments were found to be Rs. 55,660.85 million and Rs.97,587.69 million respectively,
- In the context of state bank of India. The overall volume of RTGS inward and out ward transaction numbering, 3,70,267 and 2,80,286 respectively,

- Out of that the highest volume of RTGS outward and inward transaction were found numbering, 72,500 and 51,483 in 2015-16 respectively.
- In the context of state bank of India. The overall value of RTGS outward and inward E- banking payments were found to be Rs. 1452.34 million and Rs. 1,399.58 million respectively,
- In the context of Karnataka bank Ltd.The overall value of RTGS outward and inward E- banking payments were found to be Rs.559.08 million and Rs.501.47 million respectively,
- Out of that the highest value of RTGS outward and inward E- banking payments were found Rs.125.80 million and Rs.111.35 million in 2015-16 respectively.

Suggestions for the Study

The following are the suggestions for the study

- ❖ Banks should take necessary steps to create awareness among rural people to know about how to use E-banking payment services such NEFT and RTGS etc.
- ❖ The system of transacting through NEFT must be speedy, accurate and reliable. Banks must ensure that the technology adopted by them is the latest and most efficient.
- ❖ Banks must make concentrated efforts to educate female customers to use E-banking payment such as EFT and RTGS etc. For this purpose banks must hold training programmes for customers from time to time.
- ❖ In the case of E-banking payments, problems should be occur on technical nature resulting in debiting of customer account without dispensing of cash should be rectified urgently. Care must be taken to ensure that such problems do not occur at all.
- ❖ Online banking payment is a technological advancement, which no one can wish away. But there needs to be sufficient safeguards to protect the interest of the customers.
- ❖ The banks need to provide more information pertaining to the use and utility of online banking payments among the customers, since it will help them in cutting down their.

❖ Customer queries should be opened in order to avoid mistake and also the separate counters should be allotted for providing passbook and collection of cheque to render faster services to the customers.

Conclusion

This present study highlights the major technological innovations E- banking payments and e- payments trends its keep on changing and it shows positive performance therefore banks are investing heavily in adoption of these innovations. Therefore, today the Banking has completely changed from the Banking of the Nineties. The greatest leap has been in the field of technology which had its multi-facet effects on banking and technology based banking services are being used by the banks by investing a lot of money to reduce cost, increase profitability and for customer convenience and easily deposit cash through various e-payments systems mentioned few ECS,EFT, NEFT, RTGS etc. To conclude that, according to the state bank of India statistical information shows the highest volume and value of RTGS and NEFT inward and outward E-payment transaction compared to Karnataka bank Ltd. It indicates the NEFT and RTGS e-banking payment service is better and good in state bank of India compared to Karnataka bank Ltd.

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