

Technological banking services and operating costs

The provision of technological banking services to customers has been viewed as a crucial means of reducing banks' operating costs in terms of traditional branches and staffing. However, the findings of this paper contradict the expectation that technological banking progress will improve the ratio of staff costs to overhead expenses for all Authorised Deposit-taking Institutions (ADIs).



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SINCE MID-2007 significant changes have become evident in the financial services landscape and in the competitive conditions that financial institutions face. The crisis that started in the sub-prime mortgage market of the United States has expanded to the broader financial market and resulted in a global economic downturn.

In view of the current turbulence in global financial markets, which is also evident in Australia, it is likely that major functional banking risks may have a serious impact on the profitability of Australian banks, although they apply different strategies to manage and hedge these risks. According to Unnithan and Swatman (2002), moving away from the traditional 'bricks and mortar' approach and adopting a hybrid-banking model referred to as 'clicks and mortar' is one strategy that banks apply to improve or maintain their bottom-line results. The model is becoming increasingly popular because of its perceived ability to lower costs, create new revenue streams and augment existing distribution channels (Sciglimpaglia and Ely 2002). Lu et al. (2005) emphasise that the provision of technological services to customers remains crucial for banks to: reduce operating costs; improve internal efficiencies; and handle many more banking transactions in addition to providing improved customer services.

According to Lia et al. (1999) the technological progress in banking started off with the back-office automation of banks to advance their core internal ability. The internal bank system improvements were followed by the expansion of existing products into new markets. This started the era of 'mass market' banking that developed over time to establish virtual banking, which is primarily focused on the provision of banking services via means other than traditional physical branches, and exists in the forms of ATMs, telephonic banking, internet banking, home banking and electronic fund transfers at point of sale (Eftpos). With the convenience that virtual banking provides, bank customers can perform their banking transactions at the place and time of their choice. In addition, banks benefit from low operating costs through fewer staff and fewer or restructured existing physical branches (Lia et al. 1999).

Objective and methodology of the study

This paper seeks to explore the progress of technological banking as an alternative cost efficiency and customer service strategy, and its relationship with traditional bank 'bricks and mortar' features like actual branches and the staff expenses of all ADIs in Australia.

The research identifies and quantifies the growth and extent of technological banking services in Australia by using official information from the Reserve Bank of Australia (RBA).

The quantified technological banking services are compared with the trend in the number of branches and staff costs of ADIs. Branches of foreign banks are excluded from

the research as they do not operate as service channels similar to other ADI categories due to a totally different market focus and Australian Prudential Regulation Authority (APRA) restrictions on their activities.

The actual comparison of technological banking progress with the number of branches and with staff costs

focuses on data from 2003 to 2008 and 2004 to 2008, respectively, since no prior comparative data is available.

The comparative relationship serves as a good indication of the extent to which technological banking services affect the operating risk emanating from the large overhead expenses to which ADIs are exposed.

TABLE 1. Identification of data sources that could be used for the quantification of measurable technological progress

Technological banking transaction type	Access point / account type	Source of data
Loan applications	Internet	None – constitutes internal confidential information of individual ADIs
	Telephone	None – constitutes internal confidential information of individual ADIs
Account balance enquiry	Internet	None – constitutes internal confidential information of individual ADIs
	Telephone	None – constitutes internal confidential information of individual ADIs
	ATM	None – constitutes internal confidential information of individual ADIs
Account statement	Internet	None – constitutes internal confidential information of individual ADIs
	Telephone	None – constitutes internal confidential information of individual ADIs
	ATM	None – constitutes internal confidential information of individual ADIs
Transfer between own accounts at same bank	Internet	Credit transfers
	Telephone	Credit transfers
	ATM	Credit transfers
Transfer between own accounts at different banks	Internet	Credit transfers
	Telephone	Credit transfers
Direct payment for purchases	Debit card	Eftpos debit card purchases
	Credit and charge card	Credit and charge card purchases
Payment of a third party at own bank or different bank – national and international	Standing payment authorisations	Debit transfers
	Internet payments from deposit accounts	Credit transfers
	Internet BPAY payments from deposit accounts	Credit transfers
	Telephone BPAY payments from deposit accounts	Credit transfers
	Internet credit and charge card payments	Credit and charge card purchases
	Internet credit and charge card BPAY payments	Included in credit and charge card purchases prior to 1 March 2008. With effect of 1 March 2008 included in credit transfers
	Telephone credit and charge card BPAY payments	Included in credit and charge card purchases prior to 1 March 2008. With effect of 1 March 2008 included in credit transfers
	Credit and charge card	Credit and charge card purchases
Cash withdrawals/ advances	ATM debit card	ATM debit card withdrawals
	Eftpos debit card	Eftpos debit card cash-outs
	Credit and charge card	Cash advances, but cash advances data also include cash obtained from branches

Quantification of technological banking progress in Australia

Pitre (2003) specifies that in manufacturing, value added or net output is used to measure and manage output. In the services sector, output is not tangible, therefore it is difficult to quantify. Quantification of the technological banking service progress to customers in this research excludes account balance enquiries, account statement enquiries and online loan applications because information about these activities is not available from any public data source and is treated as confidential by the individual ADIs (refer to Table 1). These activities are an integral part of technological banking but do not comprise actual cash flow transactions and are therefore regarded as inconsequential aspects for the quantification of research information. The data used for this research are the statistics published by RBA 2009a, 2009b, 2009c, 2009d and 2009e.

Table 1 identifies the different technology-based purchase, payment and cash transactions as well as the available data sources appropriate to them. It is evident from a comparison of the different transaction types and the available data sources that the grouping of the following transaction numbers and \$ value of transactions provide a good measure of technological banking progress in Australia and can be used to measure such progress:

- credit and charge card transactions;
- credit transfers;
- debit transfers (standing payment authorisations);
- ATM debit card withdrawals; and
- Eftpos debit card transactions.

The deposits and gross loans and advances of ADIs serve as the sources for technological cash flow transactions. In Table 2, the grouped transaction numbers and \$ value of the transactions are compared with the \$ value of deposits and gross loans and advances of Australian ADIs from 2003 to 2008.

The total number of technological banking service transactions has increased with 51% and the \$ value thereof with 101% from June 2003 to June 2008. The growth in the number of technological banking service transactions was slower than the growth in the \$ value of deposits and gross loans and advances. However, the \$ value growth of technological banking service transactions exceeded the growth in deposits and gross loans and advances of ADIs.

Comparison of branch networks and staff costs with technological banking service progress

Because services sector output does not comprise tangible products and is therefore difficult to quantify, different proxy indicators such as profit and volume of business per employee are used to measure employee productivity. Banks link branch and staff data with bank productivity and profitability.

Donkin (2005) indicates that an institution like the Royal Bank of Scotland cross-references employee statistics in various sections of its annual report, thus emphasising the interrelationship between employees and bank performance. The same principle applies to branches. These statistics provide powerful comparisons upon which strategic decisions could be based if year-on-year figures, as well as similar figures of competitive organisations, are available.

TABLE 2. Quantified technological banking transactions in relation to deposits and gross loans and advances of ADIs

	Jul 02 – Jun 03	Jul 03 – Jun 04	Jul 04 – Jun 05	Jul 05 – Jun 06	Jul 06 – Jun 07	Jul 07 – Jun 08
Grouped number of technological bank transactions for period (million)	3958.86	4355.80	4777.37	5140.67	5488.54	5983.76
Value of grouped technological bank transactions for period (\$ million)	6046470.00	7068857.90	8201526.54	9348543.22	10648767.24	12141187.66
Value of deposits and gross loans and advances of ADIs at end of period (\$ million)	1223824	1363518	1503299	1703187	1921036	2305954
Growth in grouped number of technological bank transactions	100.00	110.03	120.68	129.85	138.64	151.15
Growth in value of grouped technological bank transactions	100.00	116.91	135.64	154.61	176.12	200.80
Growth in value of deposits and gross loans and advances of ADIs	100.00	111.41	122.84	139.17	156.97	188.42

Source: Adapted from RBA 2009a, 2009b, 2009c, 2009d, 2009e and APRA 2008a.

Although the way that this analysis is actually performed in banks does not necessarily form part of published literature, it is common knowledge in the banking environment that it is applied in two contexts. The first context is 'physical output' measurement with very specific segmented perspective, for example, the number of client accounts per branch/employee or proportional allocation of total asset growth of a bank to branches/employees. The second context is the measurement of the relationship between employment expenses and the profitability and/or other expenses of the bank. For this research, the \$ value of deposits and gross loans and advances are regarded as applicable criteria for the number of branches and staff costs, although total operational expenses may also be a good proxy for staff costs.

Table 3 indicates, in index format, the number of ADI branches in relation to the deposits and gross loans and advances of the different categories of ADIs, classified as major banks, other domestic banks, foreign subsidiaries, building societies and credit unions by APRA (2008a), with June 2003 as the base period.

The ratio of branches to the \$ value of deposits and gross loans and advances of all ADIs has fallen. This indicates that operational efficiency, in dealing with larger quantities of deposits and loans and advances with fewer branches, has increased for all types of ADIs.

In comparison with other ADI categories, the ratio of branches to deposits and gross loans and advances for foreign subsidiaries has shown the greatest improvement. Major banks performed very well compared with other domestic banks, building societies and credit unions. However, credit unions outperformed other domestic banks and building societies. This is contrary to general expectations that the larger ADIs would be more branch efficient in terms of deposits and gross loans and advances.

A comparison of the growth in the \$ value of the technological service transactions (see Table 2) and the improvement of the branch ratios of all ADI categories

The staff cost ratios of foreign subsidiaries and building societies have increased over the whole period from July 2004 to June 2008. In essence, only major banks and credit unions have shown a stable positive relationship between staff cost ratios and technological banking service progress over this period.

provides adequate evidence that there is a positive relationship between them.

The staff costs as a percentage of deposits and gross loans and advances of ADIs is only available from July 2004 (APRA 2008a) and is indicated in index format with June 2005 as the base period in Table 4. The overall staff costs in relation to deposits and gross loans and advances for all ADIs as well as major banks, other domestic banks and credit unions have decreased over this period of time (see Table 4). The staff costs of other domestic banks do not, however, reflect a continuous downward trend as this ratio increased in both the July 2005 to June 2006 and July 2006 to June 2007 periods before it showed a major decrease resulting in an improvement in the June 2005 staff cost ratio. The staff cost ratios of foreign subsidiaries and building societies have increased over the whole period from July 2004 to June 2008. In essence, only major banks and credit unions have shown a stable positive relationship between staff cost ratios and technological banking service progress over this period.

TABLE 3. Index of branches in relation to the deposits and gross loans and advances of ADIs

	Jun 03	Jun 04	Jun 05	Jun 06	Jun 07	Jun 08
Branches to \$ value of deposits and gross loans and advances of major Australian banks	100.00	85.72	76.80	70.57	63.56	57.00
Branches to \$ value of deposits and gross loans and advances of other Australian domestic banks	100.00	91.79	85.57	85.04	80.02	72.01
Branches to \$ value of deposits and gross loans and advances of foreign subsidiaries	100.00	81.36	82.31	77.85	56.35	49.13
Branches to \$ value of deposits and gross loans and advances of building societies	100.00	103.43	95.06	91.61	88.60	73.42
Branches to \$ value of deposits and gross loans and advances of credit unions	100.00	88.68	80.28	73.32	66.92	62.46

Source: Adapted from APRA 2003a, 2003b, 2005, 2006a, 2006b, 2008a, 2008b.

When the staff costs of ADIs are compared with total operating expenses (see Table 5) some contradictory results are apparent. The staff costs of both major banks and credit unions have declined in relation to deposits and gross loans and advances, but have increased relative to total operating expenses. On the other hand, the increase in the staff costs in relation to total operating expenses of foreign subsidiaries and building societies indicate, like their ratio of staff costs to deposits and gross loans and advances, a negative relationship with technological banking progress.

It is only in the case of other domestic banks that the staff costs compared to deposits and gross loans and advances as well as total operating expenses have declined (notwithstanding instability) over the period from July 2004 to June 2008.

Given the level of staff costs in relation to total operating expenses and the fact that this ratio increased for four of the five ADI groups (with the major banks experiencing the largest increase), this could partly explain the shaky employment situation in the financial services sector in Australia during 2008. Announcements about job cuts at a number of the major bank groups in Australia were reported in the media. Westpac intended to cut about 300

jobs from its wealth management arm according to Murdoch (2008). According to Sainsbury and Murdoch (2008), National Australia Bank reduced technology staff by 443 during 2008 as retail and investment banks aggressively cut costs. They also reported that the Westpac–St.George Bank merger that was announced in September 2008 would result in a reduction of some 2000 staff. Schneiders (2008) reported that hundreds, and possibly thousands, of jobs would go from the Australia New Zealand Banking Group within weeks as the bank aggressively reduced costs in the face of the economic slowdown and credit crisis.

The widespread media commentary about the number of job cuts at the major banks supports the viewpoint of researchers like Unnithan and Swatman (2002), Sciglimpaglia and Ely (2002) and Lu et al. (2005) that ADIs regard the reduction of staff costs as an imperative means of maintaining or improving their bottom line results. However, the stance of these researchers that technology is applied effectively to leverage staff costs in normal operating circumstances is contradicted by the findings in this paper, which show a negative relationship between staff costs and total operating expenses for almost all ADI categories over the period 2004 to 2008.

TABLE 4. Index of ADI staff costs in relation to deposits and gross loans and advances – July 2004 to June 2008

	Jul 04 – Jun 05	Jul 05 – Jun 06	Jul 06 – Jun 07	Jul 07 – Jun 08
Staff costs in relation to \$ value of deposits and gross loans and advances of major banks	100.00	99.31	83.53	80.09
Staff costs in relation to \$ value of deposits and gross loans and advances of domestic banks	100.00	103.66	123.71	95.13
Staff costs in relation to \$ value of deposits and gross loans and advances of foreign subsidiaries	100.00	92.62	104.49	112.05
Staff costs in relation to \$ value of deposits and gross loans and advances of building societies	100.00	100.66	102.16	101.43
Staff costs in relation to \$ value of deposits and gross loans and advances of credit unions	100.00	100.35	94.65	89.73
Total staff costs of all ADIs in relation to \$ value of deposits and gross loans and advances	100.00	99.87	95.11	86.30

Source: Adapted from APRA 2003a, 2003b, 2005, 2006a, 2006b, 2008a, 2008b.

TABLE 5. Index of staff costs of ADIs in relation to total operating expenses – July 2004 to June 2008

	Jul 04 – Jun 05	Jul 05 – Jun 06	Jul 06 – Jun 07	Jul 07 – Jun 08
Staff costs in relation to operational expenses of major banks	100.00	100.90	94.15	159.27
Staff costs in relation to operational expenses of other domestic banks	100.00	105.69	95.94	77.54
Staff costs in relation to operational expenses of foreign subsidiaries	100.00	118.52	120.43	124.13
Staff costs in relation to operational expenses of building societies	100.00	103.82	118.59	117.33
Staff costs in relation to operational expenses of credit unions	100.00	101.18	103.49	104.46
Staff costs in relation to operational expenses of all ADIs	100.00	102.85	96.98	121.61

Source: APRA 2008a.

Discussion and conclusion

Extensive growth took place in the technological cash flow transaction services offered by ADIs in Australia over the period 2002 to 2008. The number of transactions and the \$ value of transactions increased by 51% and 101%, respectively, while the growth in source accounts for technological transactions (deposits and gross loans and advances) only increased by 88% over the same period of time. Based on this technological transaction expansion, the hypothesis of this research was that this expansion would have contributed significantly to reducing the operational risks of ADI's in terms of overhead expenses relating to physical branches and staff costs.

Findings about the number of traditional branches of the different groups of ADIs indicate that operational efficiency in dealing with larger quantities of deposits and loans and advances with fewer branches has increased for all types of ADIs. Foreign subsidiaries show the best improvement, followed by the major banks.

The ratio of staff costs to deposits and gross loans and advances, for major banks and credit unions, show a positive relationship with technological banking service progress. However, the ratios of staff costs to total operating expenses for major banks and for credit unions reflect a negative relationship with technological banking service. Staff costs increased relative to deposits and gross loans and advances and relative to total operating expenses for foreign subsidiaries and building societies, therefore also indicating a negative relationship with technological banking progress.

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It is only in the case of other domestic banks that branches and staff costs (subject to instability) showed a positive relationship with technological banking progress.

The findings of the research are subject to certain limitations. Firstly the quantification of technological banking service progress excludes non-cash flow activities like account balance enquiries due to the fact that the official Australian data sources do not provide information covering these aspects. Secondly, data is provided in different time frames (i.e. monthly, quarterly or annually) and, in some instances, is only available for rather short historical periods of time. Furthermore, very specific information required for good analysis, like the actual staff numbers of ADIs, is not available from any source, even annual reports of ADIs (except in the case of major banks).

The different findings of this research for the various ADI categories should be interpreted in terms of the expectation that technological banking progress should reduce physical branches and staff costs, as outlined by researchers such as Lia et al. (1999), Unnithan and Swatman (2002), Sciglimpaglia and Ely 2002, and Lu et al. (2005). The findings contained in this paper do not address the extent to which different ADI categories engage in technological service progress, and therefore no explanations are provided for differences in the findings pertaining to these different ADI categories. Furthermore, a complete analysis of the operational expenses of the ADI categories may be necessary to explain some of the trends apparent in staff costs to total operating expenses ratios. Future research needs to be conducted in relation to this. ☺

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