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Biometrics – the New Edge in Service Industries

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The current focus on security has boosted demand for biometric devices that can verify identity. However, security won't be the killer application; rather, the ability to redefine the customer experience could revolutionise how service companies do business.

What is Biometrics?

Biometrics is the authentication or identification of individuals based on a physical characteristic such as fingerprints, facial recognition, hand geometry or iris configuration; or traits such as signature formation, keystroke patterns or voice recognition. It is both more convenient and more secure than something you know (passwords or pieces of personal information) or something you have (card keys, smart cards or tokens). There is no risk of forgetting, losing, copying, loaning, or getting your biometrics stolen, especially if a multi-biometric approach is used.

Current applications of biometric technologies range from controlling access to facilities (used by Disneyworld), enabling voice recognition at call-centres (Home Shopping Network and Charles Schwab), to control time and attendance of employees (McDonalds), to provide self-service access to safe deposit vaults at banks (the Bank of Hawaii and First Tennessee Bank), or to cash checks in supermarkets (Kroger, Food 4 Less and BI-LO).

Security concerns and higher levels of fraud, combined with advancement in biometric technologies and reducing costs have provided an impetus for greater diffusion and highlighted biometrics' immense potential. While in 2003 industry revenues were US$719m, the estimate for 2004 is US$1.2 bn, expected to rise to US$4.6 bn in 2008.

However, the overwhelming majority of current biometrics applications is focused on simply improving security. The winners of tomorrow on the other hand will be firms that manage to harness the power of biometrics to achieve a positive redefinition of customer experience at higher levels of efficiency.

The Singapore Experience

Singapore Airlines (SIA) is one of the most successful innovators and service leaders in its industry, and the Civil Aviation Authority of Singapore (CAAS, the operator of Changi Airport), is one of the best airports in the world. SIA and CAAS believe that in the near future most international travellers will carry a passport, visa or smart card containing biometric information. Both organisations are currently employing biometrics to pilot a process offering every traveller's dream; the ability to breeze through airline check-in, security checks as well as immigration checks in less than one minute, all within a context of enhanced travel security.

In November 2004, a six-month pilot test of (Fully Automated Seamless Travel) FAST was initiated based on a biometrics technology that integrates three processes: airline check-in, pre-immigration security checks, and immigration clearance. This initiative is a world's first of integrating these processes with the clear objective of driving service excellence, while at the same time raising efficiency and improving security. FAST is expected to be rolled out in the near future to all passengers who carry biometric cards and all airlines operating through Changi Airport.

A complementary use of biometrics currently in the early stages of development is 'Baggage drop-off'. Currently, all passengers with check-in baggage have to undergo the inconvenience of carrying their bags to the check-in counter from the vehicle they arrived in at the airport. SIA wants to eliminate this by allowing passengers to drop off their baggage outside the building.

The Challenge

These processes look simple from the customer's perspective, but they are in fact highly complex from a legal, security and technological perspective, which makes it extremely difficult for competing airlines and airports to imitate.

In addition to the organisational challenge, the strategic challenge is to move beyond incremental applications of biometrics focusing simply on security, to consciously design applications that aim towards combining service excellence with higher efficiency, where higher security is a by-product rather than a raison d'être. This entails thinking both about enhancing customer experience, as well as designing and implementing significant process reconfigurations, as Figure 1 shows.

The lower left hand quadrant includes examples of biometric applications that neither involve significant business process redesign, nor present the potential for value added customer experience. The lower right hand quadrant shows examples involving significant process reconfigurations, but without the potential for substantial value added to customers or users. These two quadrants primarily focus on control: for example access, attendance or entry control. The higher left hand quadrant offers the potential for improvements to customer experience, but can easily be copied by competitors because these improvements do not involve significant business process configuration. As a result, these applications have become, or are on the way to becoming, necessary to compete; they are hygiene rather than differentiating factors.

Figure 1: Achieving sustainable advantage through biometric technologies

	Small scale process improvement	Significant process reconfiguration
Significant	Voice recognition, Bank transaction authorisation, Electronic point of sale, secure operation of ATMs or bank vaults	Sustainable, differentiating market offerings e.g. Fully Automated Seamless Travel
Negligible or incremental	Employee access control to airports, laboratories or government facilities, user access to secure IT networks, Time and attendance at work	National immigration processing (US Visit), management of patient records in health care, control of state benefits fraud

Potential impact on user/customer experience

Extent of business process redesign

Source: Heracleous & Wirtz (2005)

Locating oneself in the top right-hand quadrant, on the other hand, opens up the potential for sustainable competitive advantage, since the innovations offered, and the enhanced customer experience, are supported by unique and internally coherent organisational features.

A Gateway to the Future

The example of SIA and Changi Airport allows us to catch a glimpse of the future biometrics can offer to service firms. We could not locate another example of harnessing biometric technologies to this extent to simultaneously offer service excellence, improve efficiency and increase security in service delivery, and we believe that it will be some years before anything similar is offered in the aviation industry itself.

We are convinced that it is only a matter of time however before several imaginative applications follow in other industries. The field is open for competitors to claim the high ground and achieve sustainable success by effectively using the emerging technologies of biometrics.

Further Reading:

Wirtz, J and Heracleous, L, 2005, Biometrics meets services, *Harvard Business Review*, HBR List of Breakthrough Ideas, February: 48

Heracleous, L, Wirtz, J and Johnston, R, 2004, Cost-effective service excellence: lessons from Singapore Airlines, *Business Strategy Review*, Spring: 33-38

Heracleous, L, and Wirtz, J, 2005, Biometrics – the next frontier in service excellence, productivity and security in the service sector, *Templeton College Working Paper*

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