

Sharing Best Practices in R&D Statistics  
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# Challenges in Knowledge Intensive Services: The Role of User Innovators in the Development of Services

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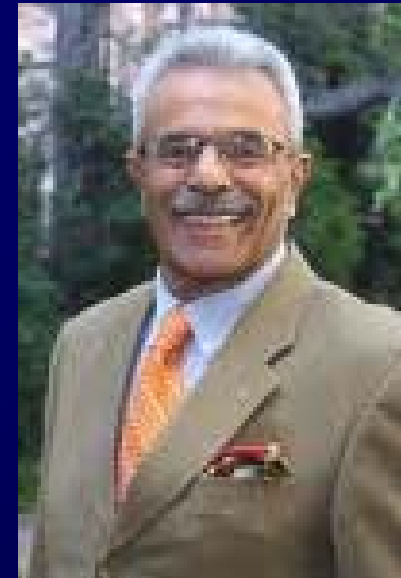


# Motivation

- Importance of services: 76.5% of GDP; 78.7% of employment (144.4 million jobs) in the US
- Users are doing a *lot* of product development and modifications in many fields (e.g., von Hippel 1998, 2005)
- Research on services innovation is scarce
  - NSD “remains among the least studied and understood topics in the service management literature” Menor et al. (2002)
- Existing literature on service innovation ignores the role of users as developers of new services

# User innovation in hospitality

*“Nothing the hotel does is producer driven. Everything is driven by the customers. **The customers have always done something first, or have asked for something.**”*



Anil V. Sampat, General Manager,  
Lisbon Marriott Hotel

# Research objectives

- To study the role of users in the development of innovative ideas for new services
  - RQ: What is the level of similarity (***function and process***) between services currently offered by service providers and prior user practices?
- Sectors studied to date: Retail and corporate banking, Hospitality (accommodation and food) and Telecom
- Finding: the vast majority (> 80%) of the new services (the ***functional*** innovation) offered by service providers were first provided by users to themselves (i.e. output of identical similarity for the user)

# Research approach (banking study)

## Step 1: Sample selection

Identification of service innovations of highest value to users



## Step 2: Identification of date of commercial introduction by banks

When were the services first commercially offered ? Focus on those introduced in the market between 1975 and 2010



## Step 3: Identification of the sources of innovation

Identify prior user practices. How closely was the function of the user-created service adopted by the producer?



## Step 4: Validation of preliminary coding by panel of experts

# Detailed research methodology for studying sources of banking services

## Step 1 - Sample selection for corporate and retail banking

- Sources: all major services offered to retail and corporate markets listed in websites of largest 5 US banks (BoA, JP Morgan Chase, Wells Fargo, PNC Bank, Citigroup)

## Step 2 - Identification of date of commercial introduction by banks

- Scanned trade journals for advertisements and/or articles with dates of introduction; consider only services introduced after 1975

## Step 3 - Search for the origin and history of these innovations

- Literature searches in guides of personal finance and other (e.g., old letters published in trade journals, court reports, etc)
- pyramid of experts - locate experts via referrals from other experts

## Step 4 - Validation by panel of 12 industry and academic experts

# Innovation history of computerized payroll services

- The first payroll system was introduced by a large baker and caterer (user company) in 1953 in London, UK
  - *“The world’s first business computer was not the product of an electricians or business machine giant, but of a catering giant: J. Lyons & Co.” (Ferry 2003)*
  - In the US GE was the first user firm to automate payroll in its Louisville (KY) plant, yielding the first automated accounting system in 1954 (Potter 1991)
  - Around the same time, a construction firm, F. H. McGraw & Co., Hartford (CT), began experimenting with remote payroll processing
- In the 1970’ firms (non-banks) started offering payroll services
- In mid-2010’s US banks started offering this service



# Innovation history of sweep accounts (both corporate and retail service)

- This service transfers money between checking and interest-bearing savings-type accounts as a way to increase their interest income
  - Corporate version introduced 1980s (Cantillon and Franzke 1998)
  - Retail version introduced in 1994 (Anderson & Rasche 2001)
- **Prior practices by users**
  - Users did sweep money from checking into savings with the objective of maximizing income from interest
  - In mid-1970's large auto manufacturers started using EDI to request money transfer for increasing income from interest
    - GM made private arrangements to tie their computers with major suppliers and 8 banks
- **Functional similarity:** the service was not *functionally* novel to users
- **Process similarity:** The means of processing the sweeping is now automatic



# Corporate Banking Services (N=22)

<i>Information services and planning solutions</i>	
1.	Balance Reporting Services
2.	Account aggregation across different institutions
3.	Alerts, notifications or reminders via email
4.	Corporate forums and communities
<i>Products, transaction services and security</i>	
1.	Entry Collection Services (ECS) including account reconciliation
2.	Merchant Services
3.	Controlled Disbursement Account
4.	Corporate Salary Account
5.	Depositing many checks as a form of debt note
6.	Cash Management Account
7.	Sweep services between any accounts in the same bank
8.	Zero Balance Account
9.	Overdraft protection
10.	Business Risk Assessment
11.	Automatic Clearing House
12.	Retailer-specific debit cards
13.	Employee expenditure management cards
14.	Advanced Lockbox (accepts both paper and electronic payments)
15.	Positive pay
16.	Remote deposit
<i>Channels to access banking services</i>	
1.	Telephone banking
2.	Online banking

# Corporate Banking Services

## Source of *functional* innovations (1975 to present)

Service Type	User first	Bank first	Joint	Total
Account information service	100%	0%	0%	4
Transaction service	94%	6%	0%	16
New access channels	0%	50%	50%	2
Total	86% (19)	9% (2)	5% (1)	22

### Examples:

- Lockboxes
- Entry Collection Services (reconciliation of payments and credits, for companies that make/receive high amounts of payments/credits)

# Retail Banking Services (N=25)

<i>Information services and planning solutions</i>	
1.	“Relationship statements” aggregating information on accounts within the same bank
2.	Aggregation of information on accounts held in <i>all</i> financial institutions
3.	Statement savings account
4.	Consumer forums and communities
5.	Alerts, notifications or reminders via email/text message
6.	Online banking budget planner
7.	Tax preparation and computation services
<i>Products, transaction services and security</i>	
1.	Automatic bill paying
2.	Money Market account
3.	Sweep service between accounts in the same bank
4.	“keep the change” program
5.	Automatic savings account
6.	Cash Management Account (CMA)
7.	Microcredit and microfinance
8.	Automatic payment of same institution loans
9.	Overdraft protection
10.	Bank-to-bank wire transfers
11.	Debit or check cards
12.	Adjustable rate mortgages
13.	Home equity credit line
14.	Dynamic password system
<i>New channels to access banking services</i>	
1.	Telephone banking
2.	Text messaging services
3.	Online banking
4.	Mobile banking

# Retail Banking Services

## Source of *functional* innovations (1975 to present)

Service Type	User first	Bank first	Joint	Total
Account information service	100%	0%	0%	7
Transaction service	93%	7%	0%	14
New access channels	25%	25%	50%	4
Total	84% (21)	8% (2)	8% (2)	25

### Examples:

- *Keep-the-change* program
- P2P transfer (introduced by PNC bank in January 2010)
- P2P lending facilitated by the bank (user innovation already adopted by European banks; not yet by US banks; to appear soon)

## Example of *functional similarity*: Account aggregation across different institutions (information services)

- This service aggregates information from bank accounts that are hold at different institutions (e.g. My Portfolio by Bank of America).
- Prior practices by users
  - Users had to aggregate information about bank accounts (and also miles, loyalty programs etc) across different institutions to figure their net worth
- **Functional similarity:** the service was not *functionally* novel to users
- **Process similarity:** The means of processing the information aggregation is now automatic and different from the manual user practice

## Example of *functional similarity* in new channels: telephone banking

- Ability of making bank transactions over the phone, typically through a voice response technology system provided by the bank
- Prior users practices - example 1 - Letter sent from South Bend on Nov 19 1901, regarding the oral acceptance of checks

*“Sir: S has been engaged in buying and selling livestock in this city and has had an account with the A bank. On Tuesday of last week a telephone call was received at the bank from B, who lives at a neighboring town from which the call came. B stated to the bank that he had sold a team to S, who had paid for it by check on the A bank, and wanted to know if the check was good for the required amount. The bank replied that the check was “all right.”*

(The Banker’s Magazine 1902a, p.58)

## Example of *functional similarity* in new channels: telephone banking (cont.)

- Prior users practices - example 2 - Letter sent from Louisville on July 5, 1902 that reported a request initiated by a user:

*“On January 2, the company, by telephone, asked the bank for \$2,000 in \$2,00 bills, and on a favorable response, sent its check for that amount on the F\_\_\_ bank, where it had funds to meet it, by messenger, who returned with the bills put up in packages.”* (The Banker’s Magazine 1902b, p.185)

- Prior users practices - example 3 - report about information request by user:

*“A telephone call to ABC Bank confirms that the check is paid. Smith therefore draws the whole balance - leaving only sufficient to leave his account ...”* (The Bankers' Magazine 1970, p.251)

Regardless of the definition of telephone banking, users didn’t wait for banks to *open the channel* and performed the function to themselves

# User Innovators in Accommodation and Food Services (work in progress)

## Source of *functional* innovations

Service Type	User first	Service provider first	Total
Accommodation services	91%	9%	33
Food Services (in hotels)	80%	20%	35

Examples: Providing Internet in the room; providing different pillow options; birthday party services



# Results

- Users play a major role in the development of new services that bring higher value to users
  - Corporate version is typically introduced before the retail version
- Results hold when we analyze the reduced sample of services from which both banks and users expect to profit and no regulation prevented banks from doing
  - 87% of new *functions* were first developed by users
- First study to quantitatively explore the role of users in development of commercially important services
- Contradict the producer-centered view of service innovation

# Managerial implications

- Producers can observe the services that users are already self-providing, and assess the business case for commercializing these services
- Producers can “*open their platforms*” to users and offer modification toolkits for users self-development of new services and self-modification of existing ones

**Thank you !!**



# **Lisbon Innovation Lab at FCEE-Católica**

## **(a proposal inspired by the MIT Innovation Lab)**

- Objectives
  - Bring together leading companies and researchers from FCEE-Católica to discuss and share results of innovations experiments
  - knowledge on User and Open Innovation
  - To hold 2 meetings per year (1 full working day)
  - To organize experiments
- Main topics
  - User and open innovation
  - Sourcing ideas for new products or services
  - New service development
  - New product development

# User innovation in services - definitions

- **User innovators** are individuals or firms that expect to benefit from **using** a service.
- **Producer innovators** are firms or individuals that expect to benefit from **selling** a service.
- A service innovation is user-developed if the developer expects to benefit from use, and provider-developed if the developer expects to benefit from sales.

(adapted from von Hippel 1988, 2005)