RESEARCH REPORT

Impact of Digital Money on Banking

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Impact of Digital Money on Banking

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INPUT Worldwide

Frankfurt
Perchstätten 16
D-35428 Langgöns
Germany
Tel. +49 (0) 6403 911420
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London
Cornwall House
55-77 High Street
Slough, Berkshire
SL1 1DZ UK
Tel: +44 (0) 1753 530444
Fax: +44 (0) 1753 577311

New York
400 Frank W. Burr Blvd.
Teaneck, NJ 07666
U.S.A.
Tel. +1 (201) 801-0050
Fax +1 (201) 801-0441

Paris
24, avenue du Recteur Poincaré
75016 Paris
France
Tel. +33 (1) 46 47 65 65
Fax +33 (1) 46 47 69 50

San Francisco
1881 Landings Drive
Mountain View
CA 94043-0848
U.S.A.
Tel. +1 (650) 61-3300
Fax +1 (650) 61-3966

Tokyo
6F#B, Mitoshiro Bldg.
1-12-12, Uchikanda
Chiyoda-ku, Tokyo 101
Japan
Tel. +81 3 3219-5441
Fax +81 3 3219-5443

Washington, D.C.
1921 Gallows Road
Suite 250
Vienna, VA 22182 3900
U.S.A.
Tel. +1 (703) 847-6870
Fax +1 (703) 847-6872

Abstract

This report analyzes the impact of digital money on retail and corporate banking business including the incremental banking revenues attributable to the use of digital money. It addresses the impact that digital money products and services are having on customer activity and business, bank services and operations, the internal information systems (IS) function, and use of information technology (IT) service providers. A forecast of the growth of digital money services in banking is provided to illustrate the magnitude of the impact of digital money use on banking.

The report also analyzes why digital money products and services have led to more use of IT service providers and issues that have arisen regarding the use of service providers. The types of services that vendors are providing to banks and the relationships in use are addressed as well as the criteria which banks utilize to select vendors for digital money products. The satisfaction that banks have with service providers supporting digital money products is also addressed. Special attention is paid to expanded relationships including partnering with service providers.

The report examines the use of digital money from a global and US perspective. Comments are made about use in other global regions in relation to selected topics.

Specific retail and corporate banking digital money products and services are addressed in the report.

The report is based on material gathered and analyzed from 150 banks and 40 vendors in worldwide locations.

Published by
INPUT
1881 Landings Drive
Mountain view, CA 94043-0848
United States of America

Electronic Banking

Impact of Digital Money on Banking

PB17 • 516• 1997

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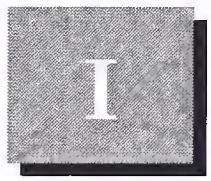


Introduction

A Purpose

1. Digital Money Overview

Interest is growing in the use of digital money due to the recent introduction of consumer products and services such as home banking (which can involve digital money as well as other services) and stored value cards. The demand for these services by consumers indicates that they will drive the use of other retail banking business, particularly lending and investment products. Opportunities for banks and service providers that have emerged from the rapid increase in use of digital money offerings has resulted in a demand for information on digital money products and services to aid planning.

- Banks had first used digital money in corporate banking. Money transfer, cash management input transactions and other corporate banking products and services involve the transmission of transactions including a monetary field of data from one financial institution to another that can be called electronic or digital money.

- Digital money has also been introduced through the ACH in the US and GIRO services in Europe and Asia.

Digital or electronic money is only a component of some banking products and services. Home banking usually involves actions to balance a checking account and obtain information as well as the payment of bills and transfers which can involve the use of digital money.

- If bills are paid by taking a transaction prepared by a home banking user and sending it to the electronic address of the payee, it is digital money.

- About half of home banking payments have to be printed out by a processor like Checkfree or by a bank that processes payments from its depositors, and mailed to payees, because the payee involved did not have an electronic address that items could be sent to or the payer did not identify the electronic address accurately.

When a stored value card is used to transfer value to another card or send money (or a micro payment) to a merchant on the Internet, it involves digital money. Banks that supply money to cards through an on-line device or accept deposits from cards have to agree to supply the service and with the specifications that are involved. Government offices in some countries can also specify requirements for this use of digital money.

Regulations that apply to the use of cash , checks or credit cards may also apply to digital money. For instance, a merchant may not be able to initiate an action to receive money before action is taken to deliver a product or service.

2. Purpose of Study

This study is concerned with the impact of digital money on banking as well as on IT service providers serving the banking market. The study analyzes how digital money products and services have become necessary to gain as well as maintain business in retail and corporate banking.

The analysis of the impact of digital money on banking indicates the impact it is having on operations and services as well as the major impact that it is having on the information systems function. (IS). The impact on IS involves an impact on IS planning, services, budgets and organization.

Information is also provided on the increased use of information technology (IT) vendors or service providers which the use of digital money has resulted in. The reasons for using service providers and the criteria for selecting providers are explored. In addition, the study analyzes the types of relationships including partnering which have been utilized in support of digital money. The reasons for partnering and the services that can be involved are also analyzed.

B
Scope

This study analyzes the use of digital money on a global basis with most emphasis given to banking business in the U.S. There is some information provided on products and services in other countries, and many exhibits address the use of digital money on a global basis. Future reports including an evaluation of digital money solutions will be available in versions for separate global regions dependent on client interest.

For the purpose of this report, we would like to offer the following definition of terms used in the report. Since these are new terms in the market, they may be used in a wider sense by some people. Respondent comments may reflect this wider definition.

Electronic banking refers to accessing typical banking services such as demand deposit accounts, borrowing and lending, payment processing, electronic funds transfer, and on-line bill payment without visiting a physical bank facility.

Electronic banking services are typically provided through telephone and/or Internet links between a customer's home or office computer and a bank's off-site operations center. The term is often used as a synonym for "home-banking," even though electronic banking is not limited to home-based (or retail) applications.

In some cases, these banking services can be provided even without access to a personal computer, as in the case of ATM machines, stored-value "smart" cards, or other limited-purpose electronic devices.

Digital money is a form of money that stores value as sequences of encrypted digits in computer code. This limited, stored value is depleted when a money transaction is completed. Like physical currency, it is transferable and can be used only once in any given transaction. Also like physical currency, values of digital money are divisible into smaller units.

Typically, digital money has no physical form. It exists entirely as software and is created in connection with a bank deposit account that holds ordinary currency. It is "spent" when a transaction with a vendor who accepts the value specified redeems it from the authorized source, usually a bank holding a local-currency demand account.

Like a paper traveler's check, digital money exists independent of any particular transaction, can be saved or stored, preserves anonymity between buyer and seller, and represents a fixed value (at least initially) in a specific currency. Also like a traveler's check, it can be spent in place of ordinary currency in numerous, if not all, business transactions that require the exchange of money. Because the instrument is secure, the bearer does not require identification.

Digital money transactions may be conducted electronically through an Internet (or other) computer link, or by means of "smart cards" that capture and record amounts of digital money. The values stored on such cards can usually be replenished when linked to a bank's demand deposit account of currency.

E-cash is used as a synonym for "digital money" or "digital cash" even though it is the proprietary product of DigiCash Corporation and refers to a trademarked product of the same name. This confusion repeats the experience of numerous branded products whose names passed into common usage when the name of the branded product began to be used for any similar product, even though produced by rival and unrelated firms.

C

Research Methodology

The research for this report is based on 150 interviews with banks and 40 interviews with vendors on a global basis. A forecast of the growth of digital banking among banks worldwide from 1997-2002 is made on the basis of data collected and research conducted with IT vendors. The interview process was focused chiefly on banks in the US and Europe as shown below:

Interviews by Country

Country	Number of Interviews
United States	90
France	16
Germany	20
UK	20

D
Report Structure

This chapter introduces the study and describes the purpose, scope and methodology of the study.

Chapter II, the Executive Summary, presents a summary of the findings and analysis conducted for this study, organized for review by executives. Recommendations for banks and IT vendors based on the findings are also provided.

In Chapter III, the impact of digital money on retail and corporate banking business is examined. The chapter also analyzes the use of digital money in banking overall and the trends and drivers that will impact that use. A forecast of the growth of digital money use in banking from 1997-2002 is made on a worldwide basis.

The fourth chapter examines the impact of digital money on the information services (IS) organization including the impact on IS planning and budgets.

Chapter V analyzes the impact of digital money on the use of IT vendors (service providers) and the criteria used to compare and select vendors.

In Chapter VI, the use of partnering with support providers is explored. The acceptability of partnering, what activities are involved in partnering and bank requirements for partners are examined, and effective partnering arrangements are noted.

Chapter VII discusses the challenges and potential for digital money. Recommendations for IT vendors and banks are also presented.

E
Related Reports

Reports issued during the second half of 1996 that addressed the electronic banking market included:

Global Retail Electronic Banking, 1996-2001

Financial Transactions on the Internet

Corporate Electronic Banking, 1996-2001

Global Banking Information Services Market, 1997-2002

The next electronic banking report that will be available in late 1997 is:

Evaluation of Digital Money Solutions

II

Executive Summary

A
Analysis of Digital Money Use in Banking

1. Impact of Digital Money Use in Banking

Bank use of digital money products is driving the use of other banking services and revenues from clients as well as cost reductions and improvements in service as illustrated in Exhibit II-1.

Exhibit II-1

Impact of Digital Money on Bank Performance

Impact of Digital Money	Magnitude of Impact, Worldwide by 2002
Annual Increase in Revenues in Retail and Corporate Banking	Over $1 trillion
Reduction in Annual Costs	Over $300 billion
Reduction in Use of Checks and Other Paper Forms	Reduction of about 60% in 1996 volumes
Improvements in Customer Service	Faster, more accurate, more personalized.

Source: **INPUT**

A number of banks stated that certain digital banking products such as the use of home or PC banking was going to be necessary to continue in the retail banking business in the future. Banks with significant market share in corporate banking business stated that competitive capabilities in digital money systems such as money transfer and SWIFT would also be critical for corporate banking business.

2. Forecast of Digital Money Use by Banks

Estimates of the use of digital money by banks in 1997 and 2002, shown in Exhibit II-2 reveals that its use is widespread and growing rapidly.

Exhibit II-2

Forecast Use of Selected Digital Money Products/Services by Banks

Digital Money Use by Banks	Proportion of Banks Using Product Worldwide, 1997	Proportion Using Product Worldwide, 2002
Money Transfer, ACH, GIRO or SWIFT Transactions	75%	95%
Bill Payments from: PC, Videotex, Terminal Entry.	70%	90%
Pay/Transfer Instructions Key Entered by Phone Operators	50%	60%
Use of Smart/Stored Value Cards	30%	70%
Use of Internet for Payment or Transfer Instructions	<5%	90%

Source: **INPUT**

In addition to the benefits that digital money products offer to banking, these products also present challenges that can have an adverse impact on earnings. Banks may not select the products that would have the best revenue potential in their markets or be most successfully implemented or have a successful market life as illustrated in Exhibit II-3.

Exhibit II-3

Challenges That Can Adversely Impact Digital Money Products

Challenges Reported by Banks	Specific Issues or Concerns
Planning Digital Money Products	Selecting products, developing forecasts for products, determining pricing strategy.
Implementing Digital Money Products	Selecting digital money solutions, determining support required for users
Obtaining Skills and Resources to Develop and Support Digital Money Products	Selecting service providers, determining relationship to have with providers
Researching Security and Standards Issues	Determining what sources to consult and work with

Source: **INPUT**

Banks report that problems encountered in overcoming these challenges result partially from the fact that bank IS departments often have limitations in the availability of resources with necessary skills to meet needs for digital money products. As a result, service providers with relevant knowledge and experience are often called upon for support or even for a partnering relationship. Reasons why service providers may have a partnership relationship with banks and help them plan, market and support digital money products are summarized in Exhibit II-4.

Exhibit II-4

Reason for Use of Service Providers: Digital Money Products

Reasons for Impact of Service Providers	Relative Importance, Worldwide
High Level of Knowledge and/or Experience with Digital Money Products	4.5
Provider Offers Digital Money Products or Components of Products	4.3
Up to Date Knowledge on Product Improvements and Competition	4.1
Ability to Aid with Marketing and Support	4.0

Source: **INPUT**

Knowledge and experience with digital money products is of greatest importance due to limitations in skills of internal staffs. Skills needed to successfully implement digital money products/services such as knowledge of telecommunication protocols, Java or chip technology for smart cards can also be limited among vendors as well.

The reasons noted in this exhibit have more impact on the use of retail banking digital money products.

B
Impact of Digital Money on Retail Banking

1. Satisfaction with Benefits from Digital Money Projects

Banks are highly satisfied with digital money projects in retail banking due to the impact on benefits being obtained or anticipated. as shown in Exhibit II-5.

Exhibit II-5

Impact of Digital Money Products/Services on Retail Banking

Product/Service Impact	Rating of Satisfaction Worldwide	Rating of Importance by Banks Worldwide
Gain Accounts	4.3	4.1
Increase Lending, Deposit and Other Product Revenue	4.2	4.2
Hold Present Accounts	3.7	3.3
Meet Demands of Clients	3.6	3.1
Generate Cost Savings	3.3	3.3

Source: **INPUT**

Meeting demands of clients can have more impact on retail bank business than many banks recognize. In particular:

- Upscale customers who have familiarity with technology and PC s at home are more apt to switch accounts to banks that have attractive digital money products.

- Home banking with a personal financial software product or smart cards that can down loaded with funds at a personal ATM can be reasons for switching accounts.

A growing number of banks mentioned that they have tried to become more sensitive to the wishes or demands of their customers.

2. Benefits Anticipated from Future Digital Money Retail Banking Business

Although they expect many changes in future digital money products, particularly in telecommunications services and graphic enhancements, banks estimate that the major impact of future digital money developments on retail banking will be benefits from home or PC based banking and ATM services as shown in Exhibit II-6.

Exhibit II-6

Impact of Selected Retail Digital Money Products/Services by 2002

Digital Money Product/Service	Level of Impact, Worldwide
Home and PC Banking including Use of Personal ATM Units or Upgraded Videotex	4.3
ATM, Kiosk, Public ATM for Downloading Smart Cards	4.1
On-line Debit, Credit Card Transactions	3.8
Smart cards and Stored Value Cards	3.3

Source: **INPUT**

Banks point out that the use of limited purpose ATMs in public places and personal ATMs in home banking (which can download funds to smart cards) will result in significant changes in home banking and ATM services by 2002.

3. Satisfaction with Service Providers on Digital Money Projects

Since the IS staffs of banks generally do not have the experience and skills required for digital money projects, banks have relied on service providers in many situations as indicated in Exhibit II-7.

Exhibit II-7

Satisfaction with Service Providers for Retail Banking Digital Money Projects

Type of Service/ Product Supplied by Service Providers	Importance of Service Provider Aid, Worldwide	Rating of Support from Provider
BPR/Change Management	3.1	4.0
Business/Product Planning and Justification	4.6	4.3
SI and Other Development Services	4.4	4.6
Tools and IT Products	4.3	4.1
Support and Operations	3.9	4.1
Education and Training	3.7	3.9

Source: **INPUT**

The satisfaction level with the performance of service providers is high, possibly because many bank retail banking departments have found it necessary to use them when IS departments have not been able to meet needs.

C

Impact of Digital Money Products/Services on Corporate Banking

Benefits of retail banking focused on increasing the number of accounts and revenue. Bank benefits from digital money products/services for corporate banking customers are led by holding the lending business of customers as indicated in Exhibit II-8.

Exhibit II-8

Impact of Digital Money on Corporate Banking

Product/Service Impact	Rating of Satisfaction Worldwide	Global Rating of Importance
Hold Lending Business	4.6	4.7
Increase Total Business From Clients	4.3	4.1
Reduce Costs	4.1	4.3
Increase Global/Regional Business	3.9	3.8
Improve Service	3.9	3.7

Source: **INPUT**

The impact of digital money on corporate banking will increase still further by 2002 due to improvements in communication and application techniques.

As shown in Exhibit II-9, there are different values given to the services offered by providers than was the case for retail banking products.

Exhibit II-9

Satisfaction with Corporate Banking Digital Money Service Providers

Type of Service/Product Being Supplied	Importance of Service or Product, Worldwide	Rating of Support from Provider
BPR/Change Management	4.1	3.9
Business/Product Planning and Justification	3.2	4.1
SI and Other Development Services	4.6	4.2
Tools and Products	4.1	3.9
Support and Operations	3.5	3.7
Education and Training	3.8	3.5

Source: **INPUT**

The emphasis in corporate banking applications is on the supply of services that can aid development although software products and tools of vendors that specialize in digital money applications such as Logica in money transfer, AMS in letter of credit and ALLTEL in a set of integrated products can be of importance.

D

Impact of Digital Money on Use of IT Vendors

Banks report that they are very likely to utilize IT service providers for digital money projects, as shown in Exhibit II-10, for reasons that extend beyond obtaining support in development and implementation.

Exhibit II-10

Impact of Digital Money on Use of IT Service Providers

Impact Reported by Banks	Relative Impact in US	Impact - Europe
Provider Involved in Product and Business Planning	4.3	3.7
Provider Involved in Development and Implementation	4.1	3.9
Provider Involved in Operations and/or Marketing	3.7	3.1

Source: **INPUT**

Service providers are often consulted or used by banks to plan their digital money offerings since they have relevant market and product knowledge.

- DigiCash, Cybercash, Checkfree, Microsoft, Mondex, NCR, Siemens Nixdorf, Toshiba, NTT and NTT Data among other vendors have spent time helping banks evaluate options and plan product directions.

- IBM is involved in the planning, implementation and use of the Integrion Network which supports applications of a group of 18 banks.

- SI vendors with experience in digital money products such as Andersen Consulting, Unisys and EDS are also active in implementation due to their network and banking skills as well as the fact that they can respond to needs rapidly as indicated in Exhibit II-11.

Exhibit II-11

Reasons Banks Use IT Vendors For Digital Money Implementation

Reasons Reported by Banks	Average Impact - US	Impact - Europe
Bank IS can not respond rapidly to needs	4.3	3.9
Service provider has digital money products or product components	4.1	3.9
Provider has knowledge and experience	4.1	3.9
Provider can start immediately	3.7	3.1
Provider maintains up to date knowledge on product improvements and competition	3.4	3.1

Source: **INPUT**

IT vendors or service providers have developed these capabilities in support of digital money business to aid banks as well as to support initiatives of their own if opportunities present themselves. These provider strengths with digital money are causing banks to consider more extensive relationships with them as shown in Exhibit II-12.

Exhibit II-12

Possible Future Relationships With Digital Money Service Providers

Bank Relationship With Vendor	Relative Importance Worldwide
Partnering Arrangements	4.5
Establishing Favored Providers for Digital Money Projects	4.3
Using Standard Bid Process	3.6

Source: **INPUT**

Since there is a constant stream of new digital money product offerings and technological developments that can enhance products, a relationship with a knowledgeable service provider can offer some insurance against falling behind.

Some banks are also apprehensive about the competition that can arise from IT vendors as well as from other non-banks, for example:

- Several banks pointed out that banks which promote the use of personal finance management software (PFS) such as Money or Quicken with home banking could find that the PFS vendor was able to sell financial services to bank clients by imbedding instructions for services in the PFS product.

- The banks who are members of Integrion have guarded against this by using an Intranet to control communication between banks and customers. Several other banks are using the Five Paces software in place of PFS like Quicken or Money since it provides more protection against vendor initiated services.

Where banks are only considering support from service providers for projects that have been planned and not partnership or other arrangements, the requirements focus on the availability of relevant skills as shown in Exhibit II-13 since this is an area where many banks find deficiencies.

Exhibit II-13

Requirements for Support from Digital Money Service Providers

Requirements Reported by Banks	Importance - US	Importance - Europe
Experience in Implementing Digital Money Products	4.5	4.3
Skills in Communication and Special Equipment Such as ATM Units	4.3	3.9
Experience with Software Selected for Application Development	4.3	3.7
Personnel Availability	3.9	3.9
Experience with Banking Systems	3.3	3.5

Source: **INPUT**

In addition to seeking aid from support providers for specific project assignments, a number of banks were also interested in a partnering relationship with vendors as noted previously. The factors driving this trend are indicated in Exhibit II-14.

Exhibit II-14

Factors Driving Use of Partnering by Banks for Digital Money Products

Factors Reported by Banks	Impact Reported - US	Impact - Europe
Need for More Extensive Planning for Digital Money Products	4.2	3.8
Shortage of Relevant Skills in IS Staff	4.1	3.9
Most Cost Effective Means for Digital Money	3.9	3.9

Source: **INPUT**

The impact of partnering has caused many banks to have a less proprietary attitude toward digital money products. They use products such as Mondex or Checkfree's payment options rather than unique developments and rely less on unique offerings and internal IS support as illustrated in Exhibit II-15.

Exhibit II-15

Impact of Partnering on Use of Digital Money

Impact Reported by Banks	Average Impact in US	Impact - Europe
Less Reliance on Internal IS	4.5	3.9
Bank Uses Standard Products	4.2	3.9
Vendor and Bank Names Associated with Product	3.6	3.1

Source: **INPUT**

Banks report that service providers that they would consider for partnering arrangements must have certain strengths or capabilities as illustrated in Exhibit II-16.

Exhibit II-16

Bank Requirements for Partnering Arrangements

Requirement Reported by Banks
Knowledge and Experience With Digital Money Technology
Can Aid in Planning Products
Availability of Products and Services for Implementing Digital Money Products
Ability to Aid Bank to Market and/or Support Digital Money Products
Ability to Help Bank Reduce or Control Bank Costs
Can Help Bank Stay Up to Date

Source: **INPUT**

E
Recommendations for Banks and IT Vendors

1. Recommendations for Banks

The major recommendations for banks are to plan more fully for the introduction of digital money. Over half of worldwide banks planning digital money products report they did not fully research issues of importance such as those indicated in Exhibit II-17.

Exhibit II-17

Recommended Actions for Banks Offering Digital Money Products/Services

Actions Recommended by Banks	Relative Importance of Issue to Banks, Worldwide
Developing Realistic Forecasts	4.2
Selecting Products Best Suited to Customer Needs	4.1
Developing Business and Product Plans for Digital Money	3.9
Researching Security and Standards Issues	3.7
Developing Implementation/Support Plans	3.3

Source: **INPUT**

Some banks report that they initiated digital money products without full planning in order to gain experience or beat competitors to market.

Banks must consider using IT service providers for assistance if they are not able to accomplish the planning actions with internal staff.

Other choices open to banks for obtaining aid in planning or developing and offering digital money products are:

- Work with other banks in a consortium or group activity such as Integrion.

- Use a service provider that can aid with planning, implementing and offering digital money products and services. Possible providers include bank groups like Integrion which offers services to non-member banks outsourcers, SI vendors and vendors of solutions. The prior section mentions possible providers.

Banks also must analyze their needs and evaluate potential providers as discussed in the prior section.

The first task that banks should consider before proceeding with plans for digital money projects and evaluation of IT service providers is a research or review of products that are being offered, experience of these products in the market, and current plans for product improvement and use of new technology.

2. Recommendations for IT Service Providers

IT service providers should encourage prospects to engage in a review of the market and products as mentioned above or they should provide it themselves. Providers should also make sure that banks have carried on sufficient planning on their markets and potential products to ensure that products are economically viable.

- Several vendors reported that they found banks had not chosen the products or features of most interest to their customers and/or had not priced the products competitively or planned adequate support services for them.

- If vendors do not review or investigate plans, they may find that projects or work that is planned will not be realized.

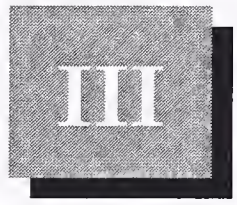
Service providers must also maintain knowledge of new digital money products/services and new development in technology that can enhance these products and services. Since these products can be used remotely, banks that develop home banking systems, for instance, can find that they are losing business to remote as well as local banks with more appealing home banking services. Banks who have used vendors to aid in implementing services are likely to be unsatisfied with vendors who help to implement systems that are not competitive.

Service providers report that they must have considerable knowledge of sectors of the digital money market that they serve as well as personnel with the skills in highest demand in support of those sectors of the market.

- Banks are more apt to seek vendor services to counter deficiencies in their internal IS staffs.

- Banks are also seeking aid from vendors with experience in implementing digital money products. Vendors must be prepared to address these needs as well.

IT vendors also report that banks are interested in service providers who have products or components of products that can help to build a digital money offering. The products that have caused banks to be attracted to vendors include networks, specialized terminals, smart cards, personal financial services, technology to support letter of credit services and software products that support money transfer or use of the Internet.



The Impact of Digital Money on Banking

A
Analysis and Forecast of Digital Money Use

1. Bank Use of Digital Money Products and Services

Over 90% of banks, worldwide, have implemented digital money products or services or have plans for the use of digital money. Most banks use the term, digital money, to refer to retail banking products and services although larger commercial banks also point out that corporate banking involves the use of digital money. The functions most often mentioned in regard to digital money include:

- Payment of bills or transfers between accounts entered from home banking or videotex systems.
- Withdrawals of cash, transfers of money and payments initiated at an ATM or advanced ATM.
- Payments from stored value or smart card.
- Payment through terminals or networks from credit and debit cards.
- Transfers between accounts or payments initiated by call center operators.
- Preauthorized debits and credits. These are standing instructions that initiate a payment or credit message through the ACH.
- Transactions that initiate payment or payment items handled on the Internet.

About 35% of bank respondents noted that money transfers, instructions to corporate cash management services and other bank functions involving trade or transfer of funds including transfers of funds to cover investment activity could also be characterized as digital money.

In addition to transfers of digital money that involve banks, such transfers could take place among individuals and companies. A small percentage of banks mentioned the likelihood of such items, but had no estimates regarding the use of digital money apart from banks.

The current use of Digital Money products in the US and Europe is shown in Exhibits III-1 through III-14

Exhibit III-1

Use of Preauthorized Debits/Credits, US

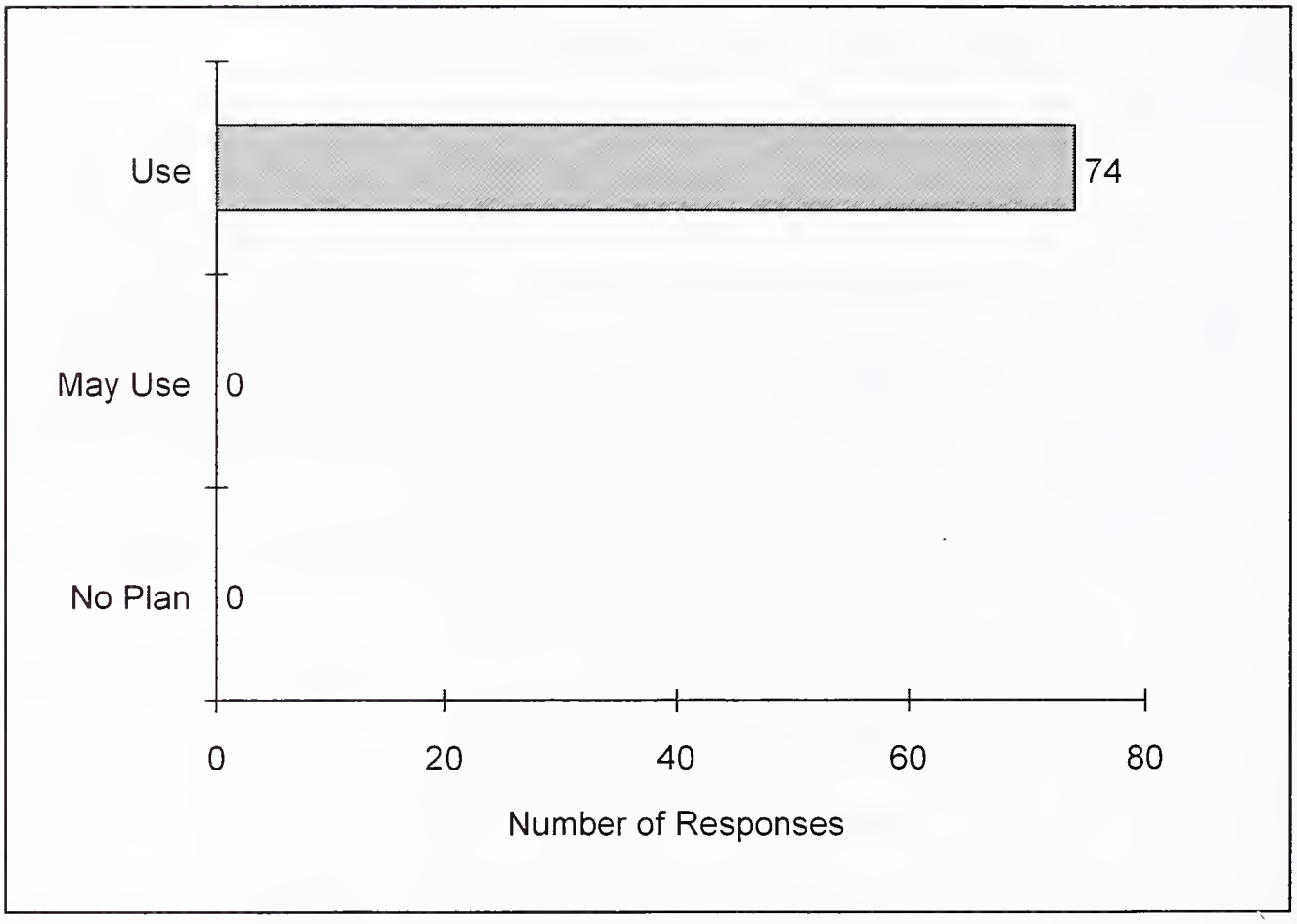


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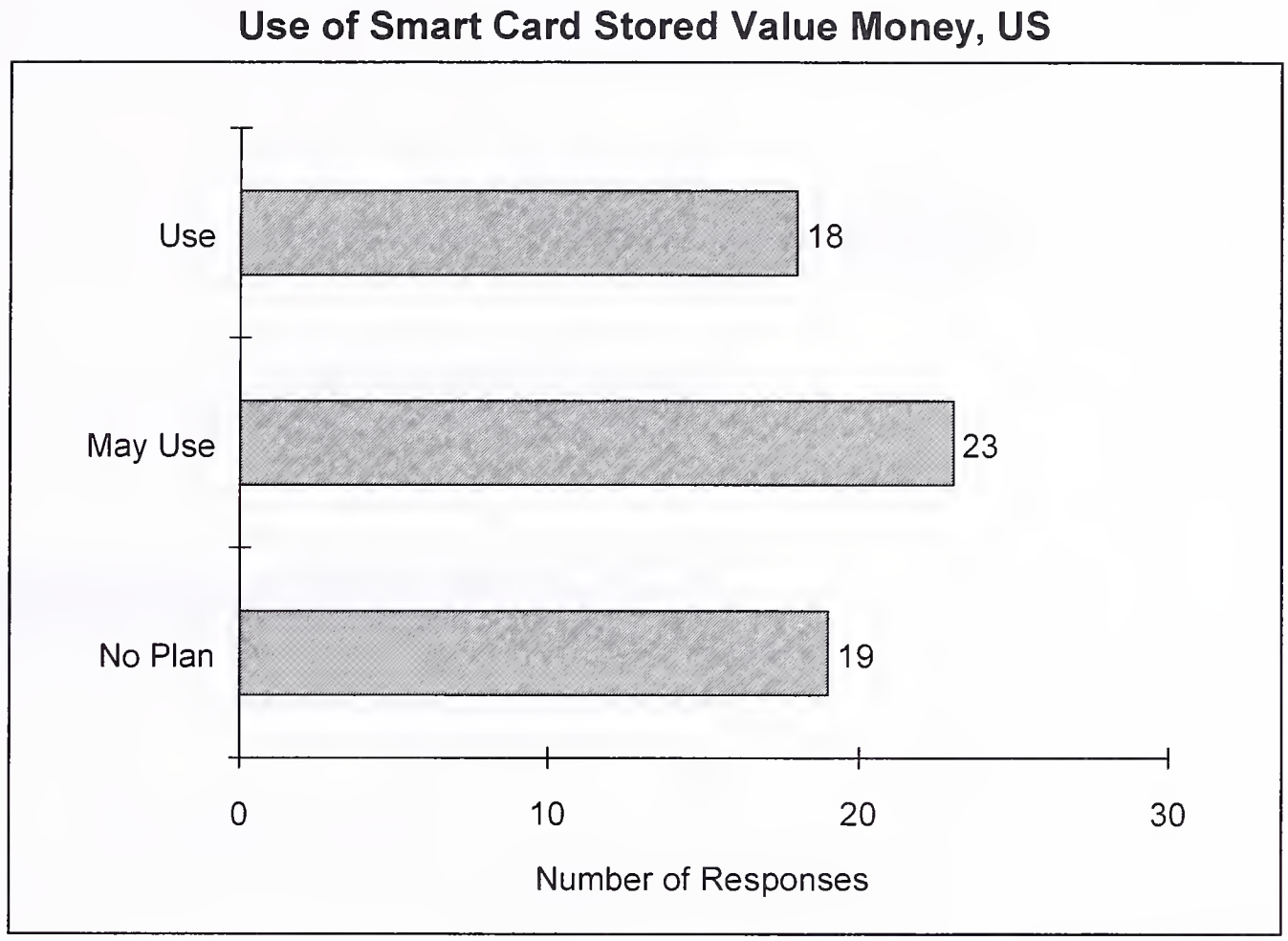
Exhibit III-2



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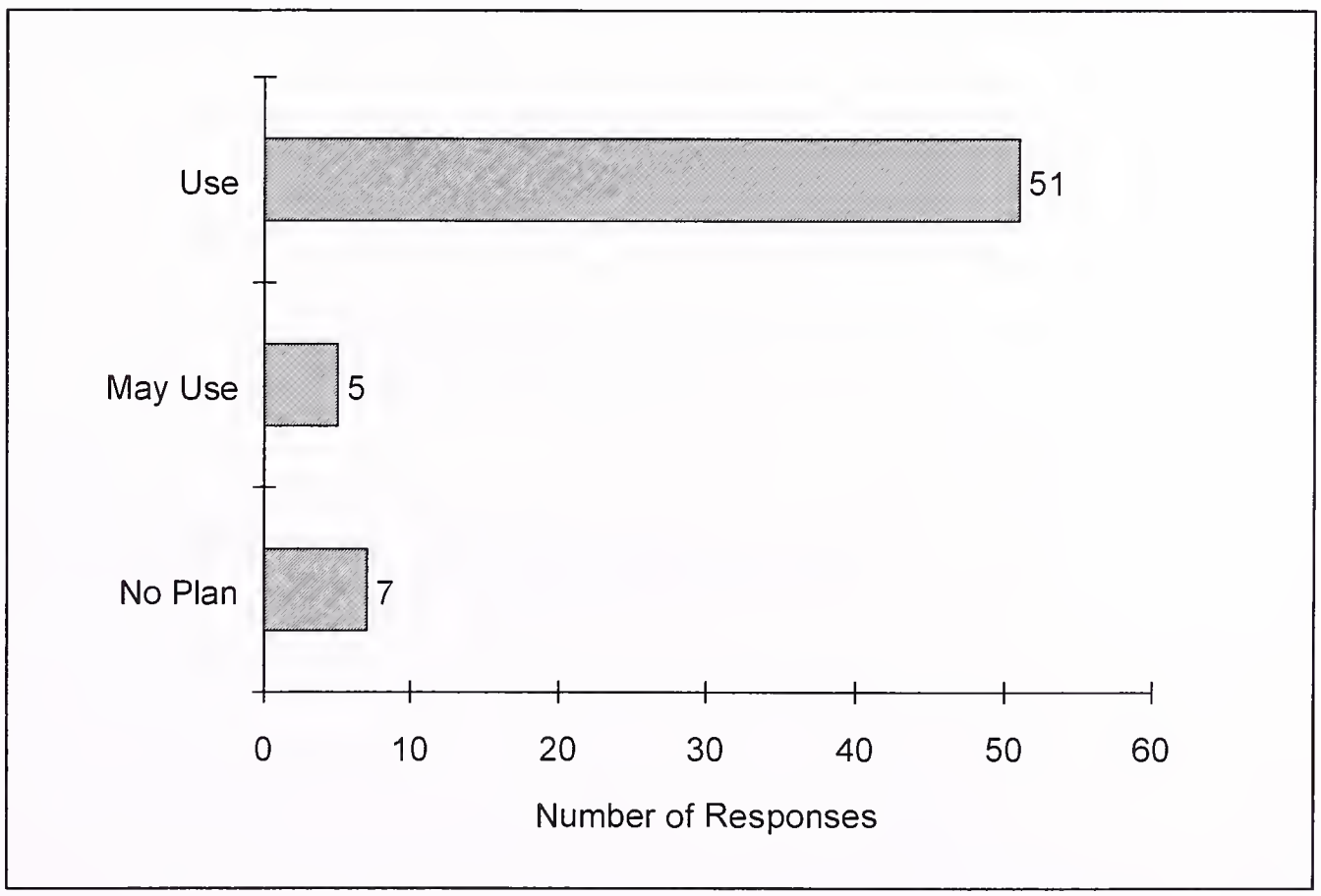

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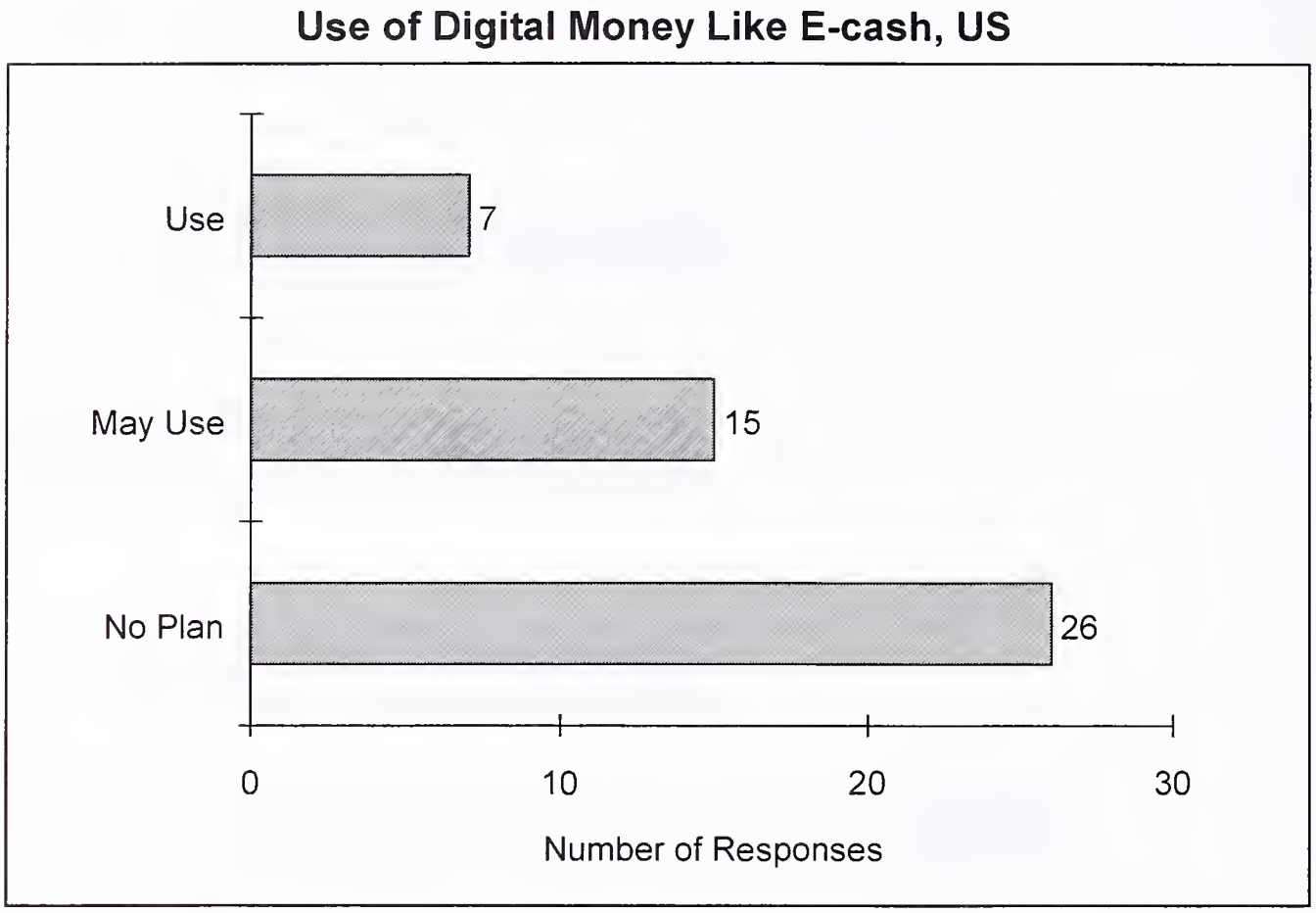

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Exhibit III-5

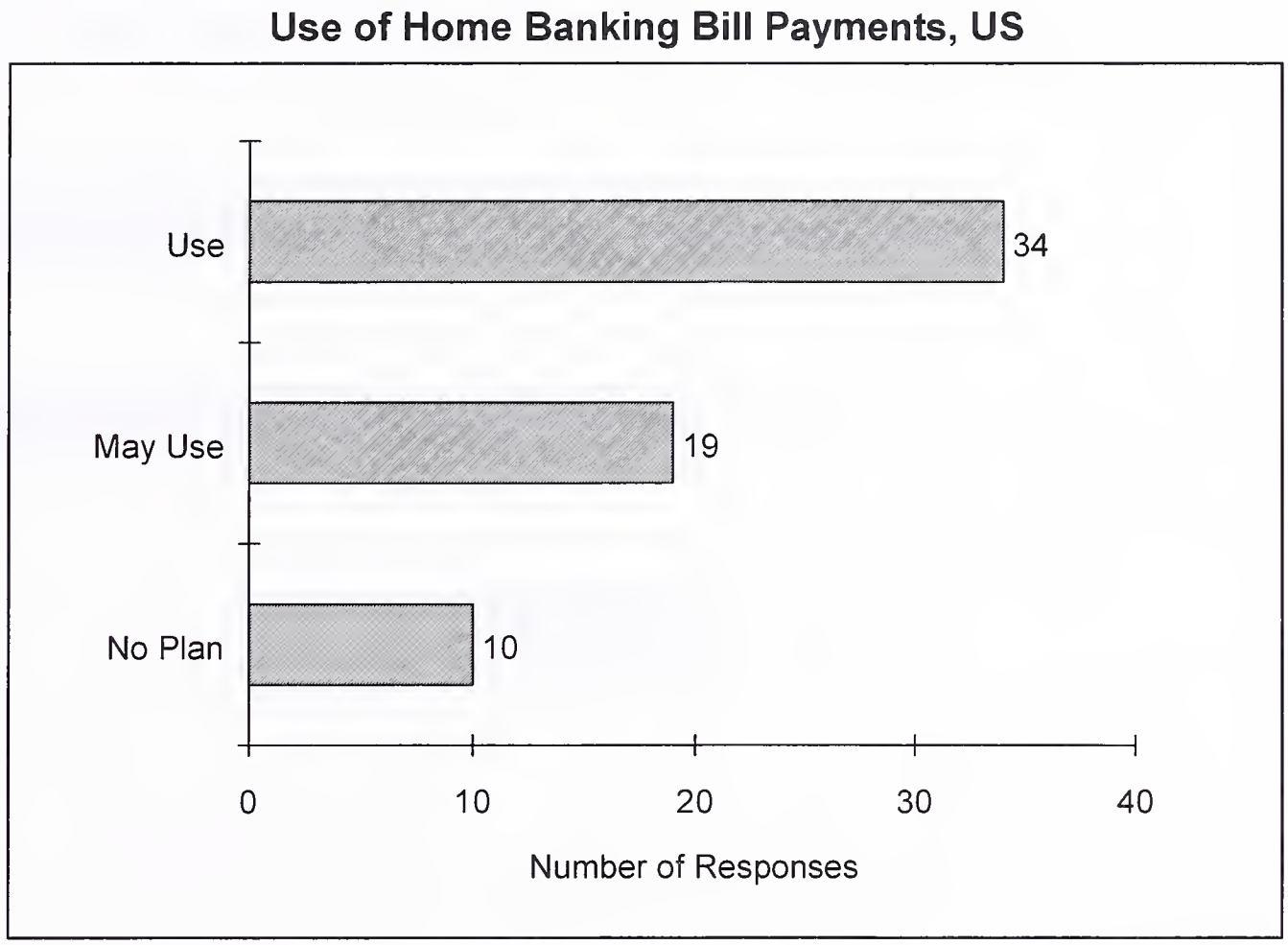

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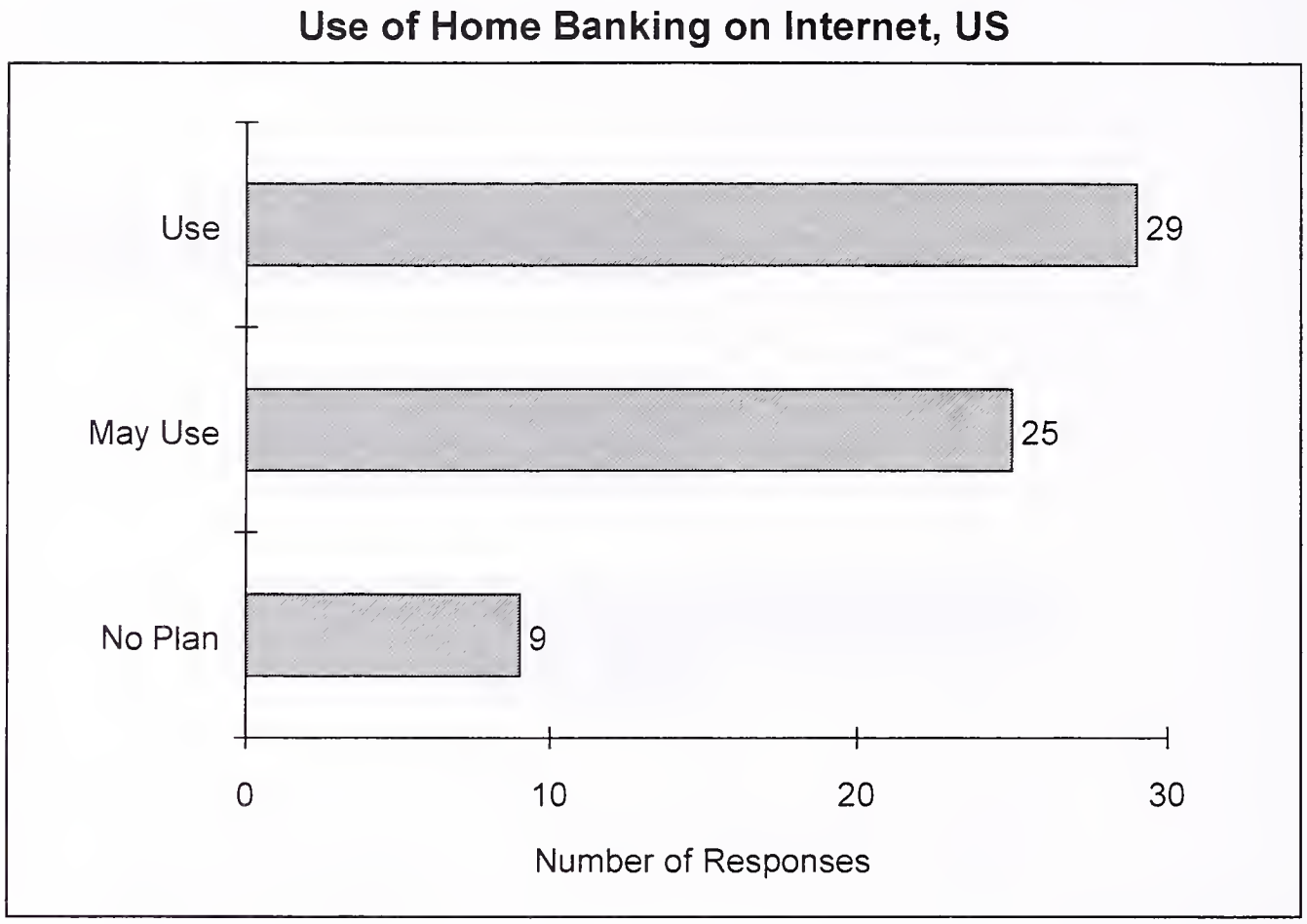
Exhibit III-6



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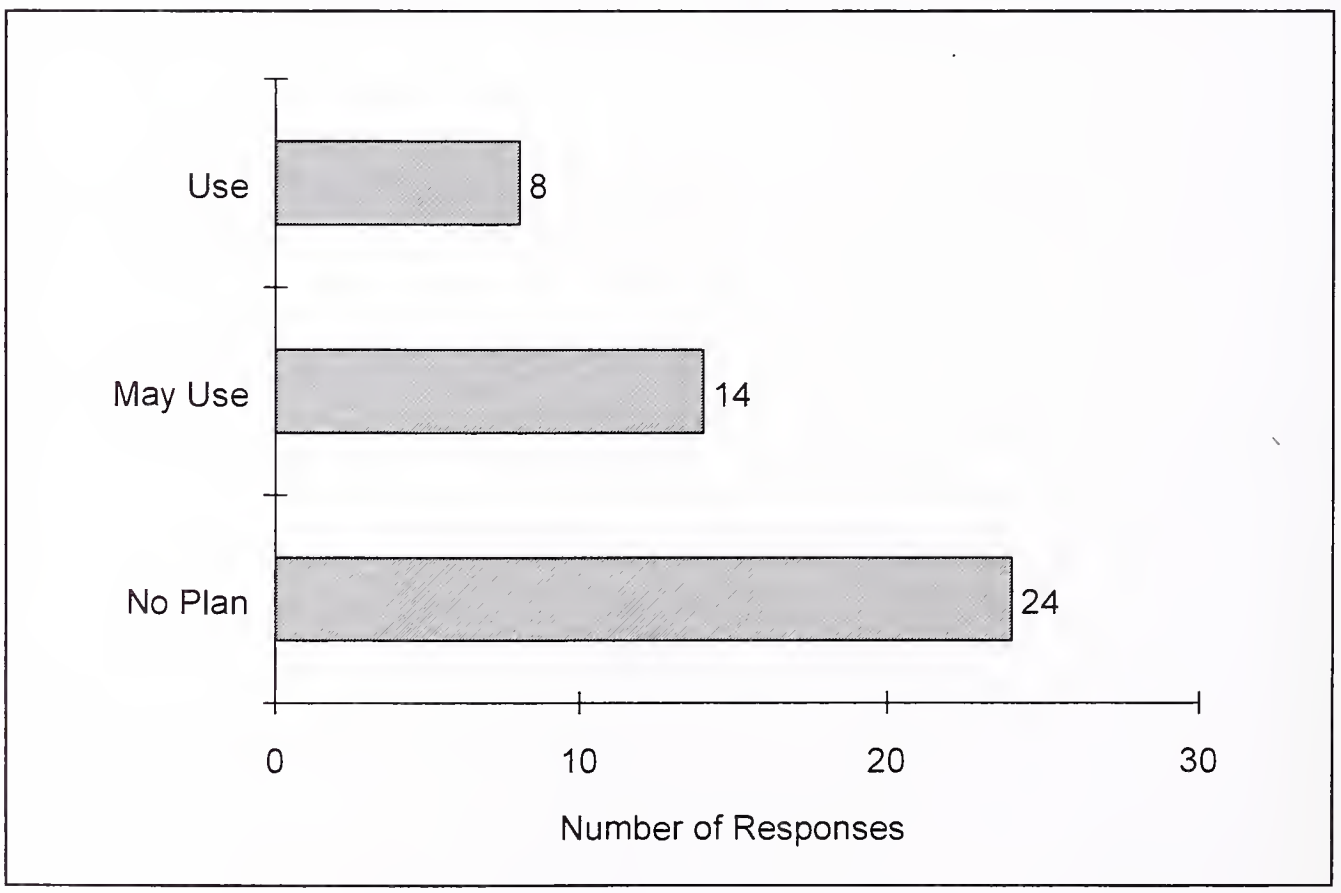

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Exhibit III-8

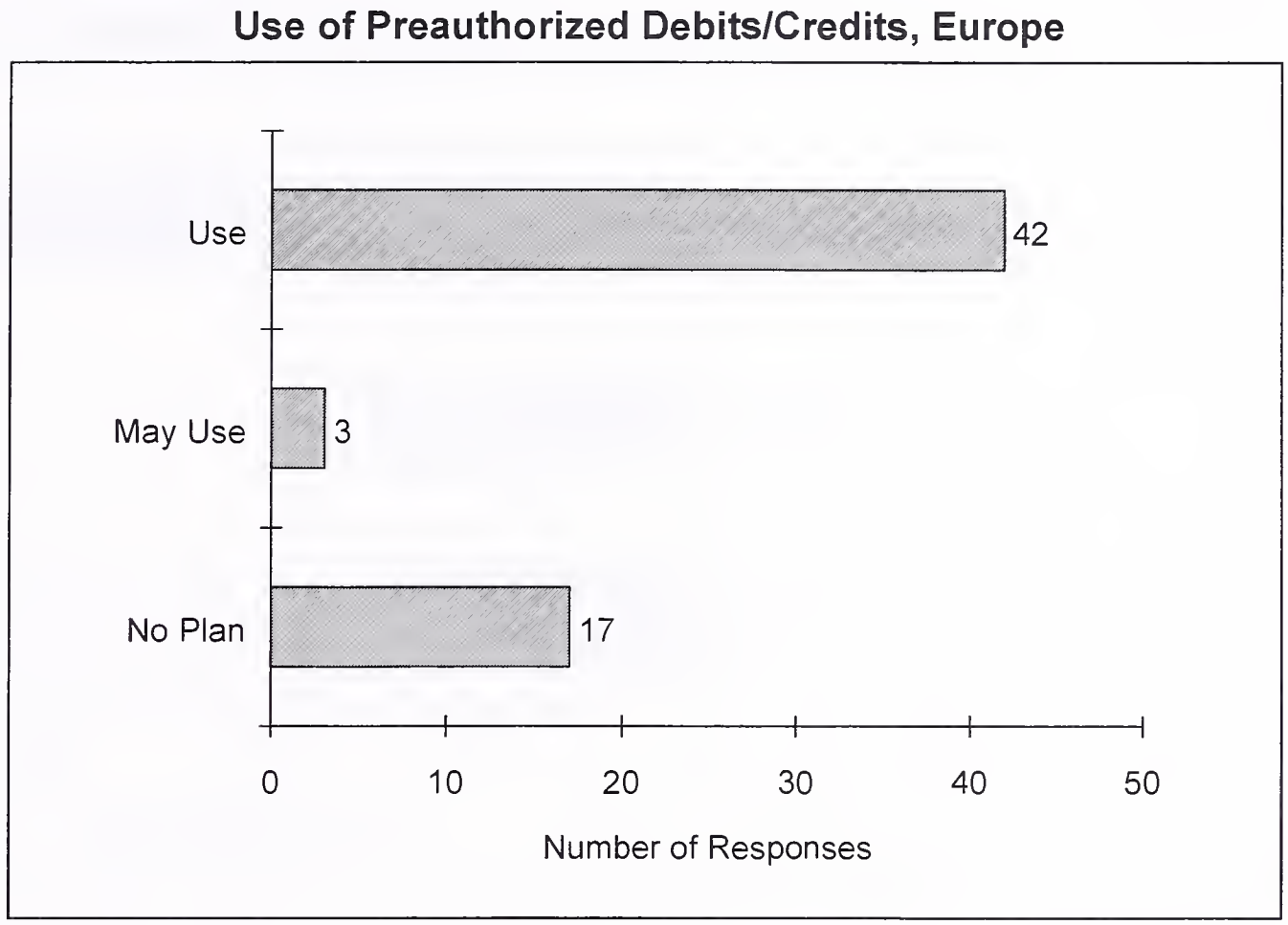

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Exhibit III-9

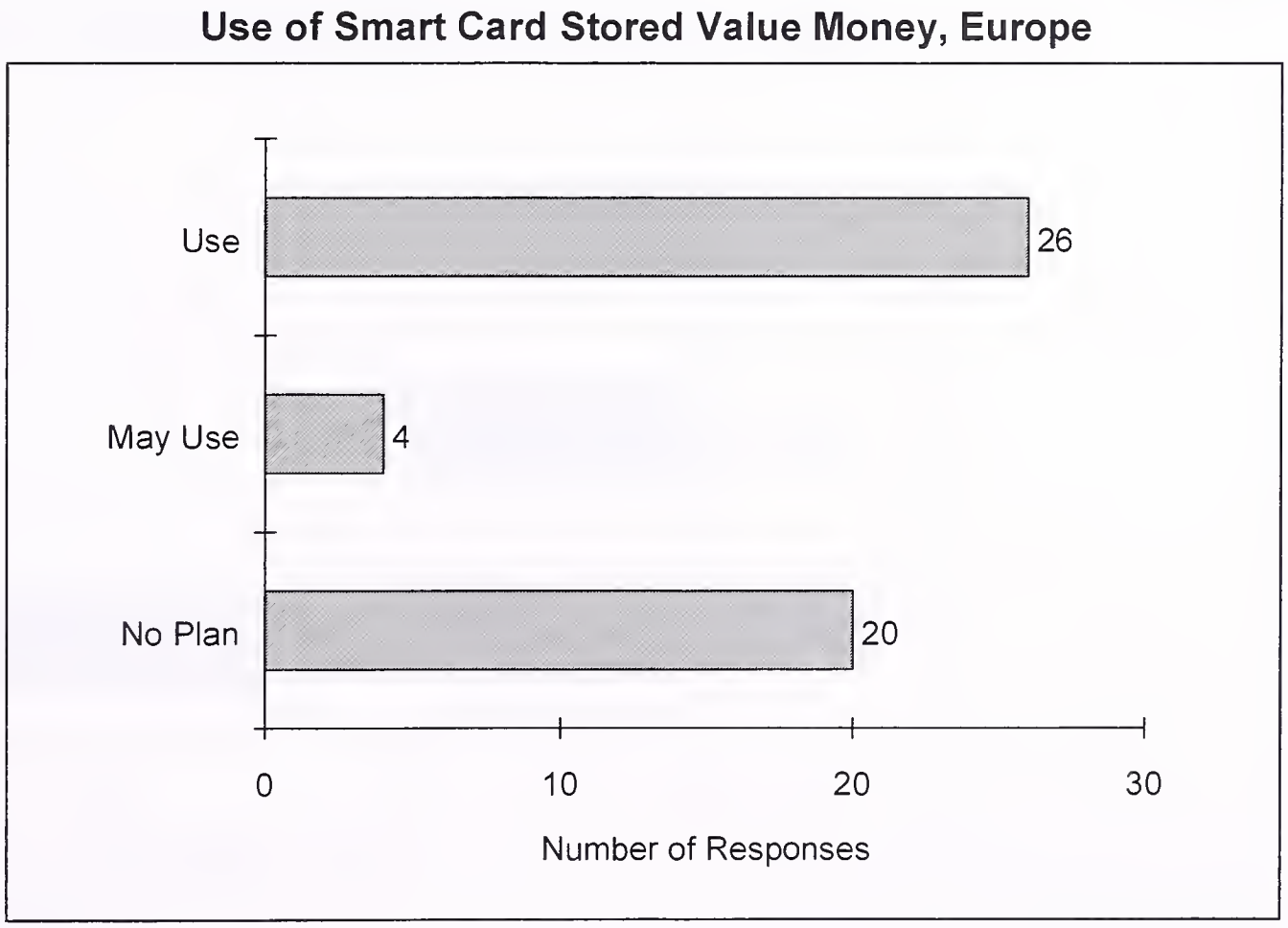

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Exhibit III-10

Use of Transfer of Money for EDI Transactions, Europe

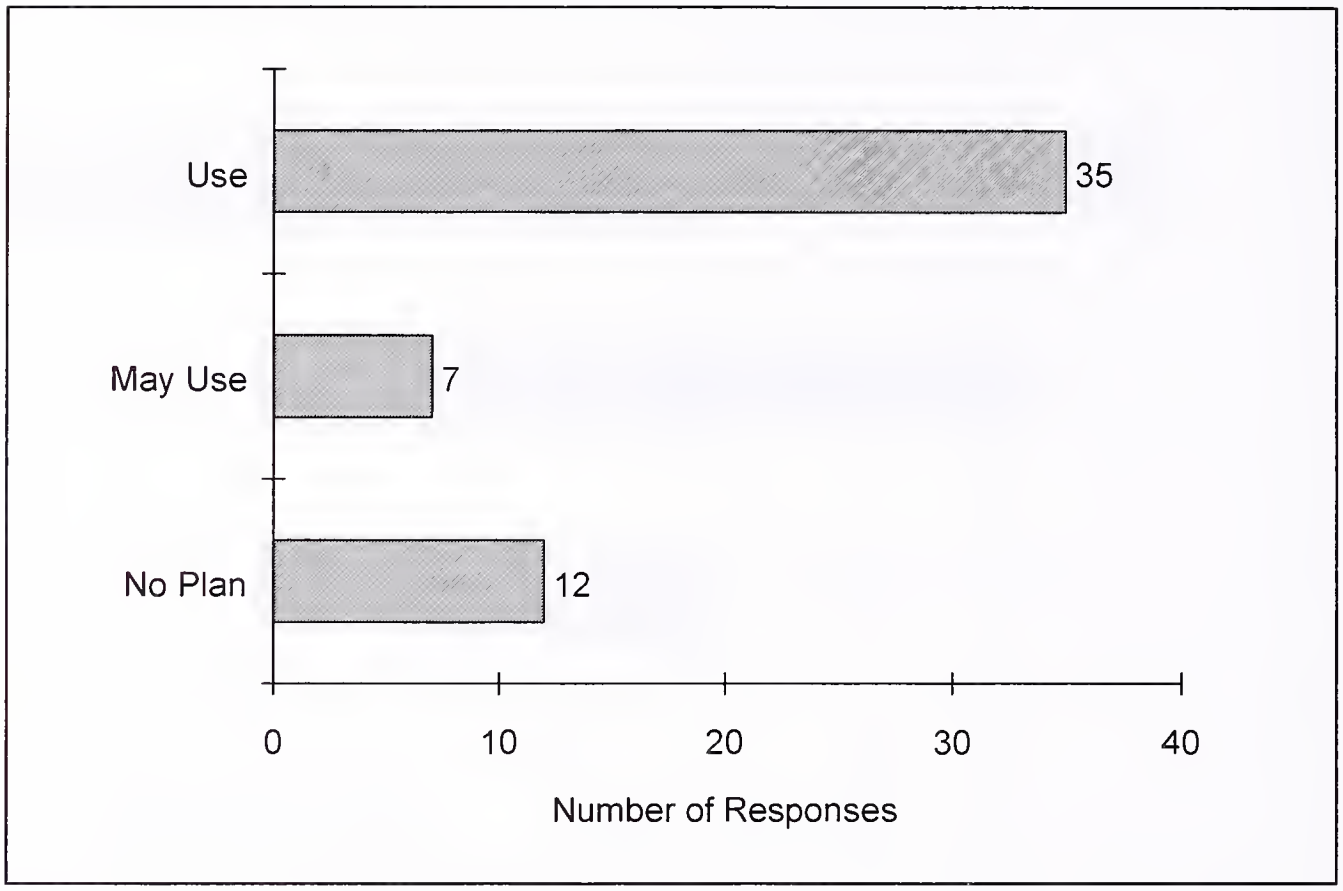

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Exhibit III-11

Use of Digital Money Like E-cash, Europe

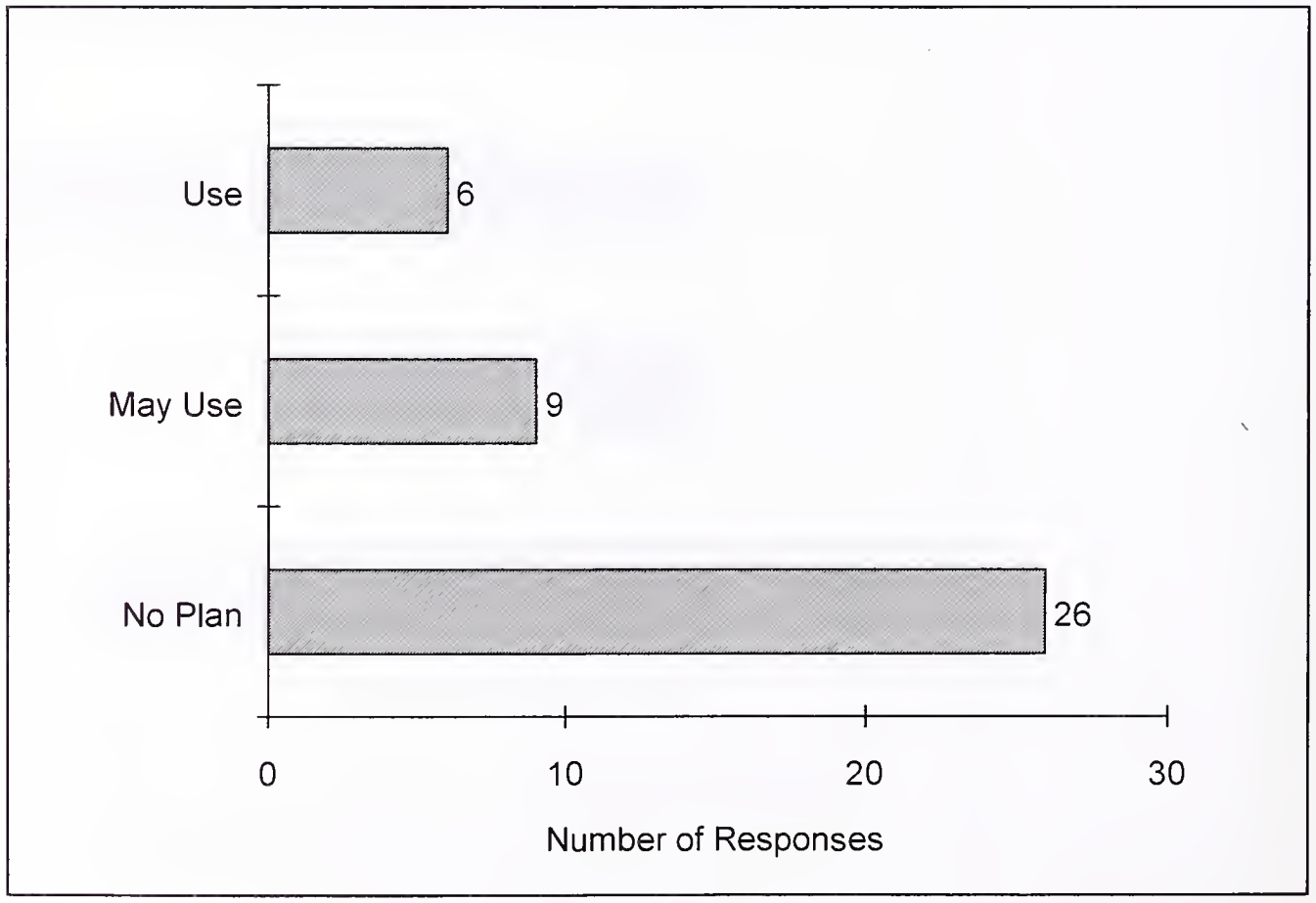

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Exhibit III-12

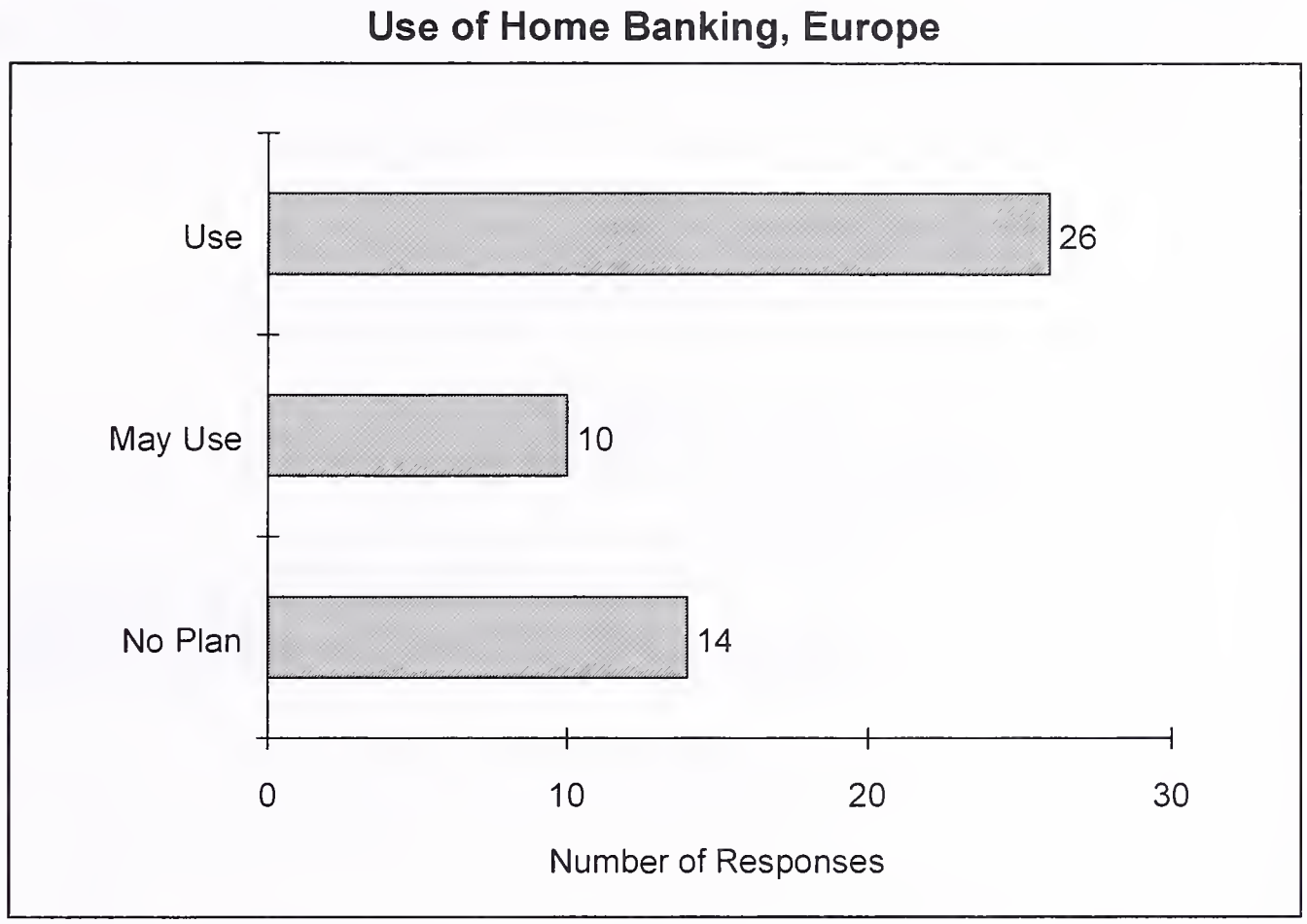

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Exhibit III-13

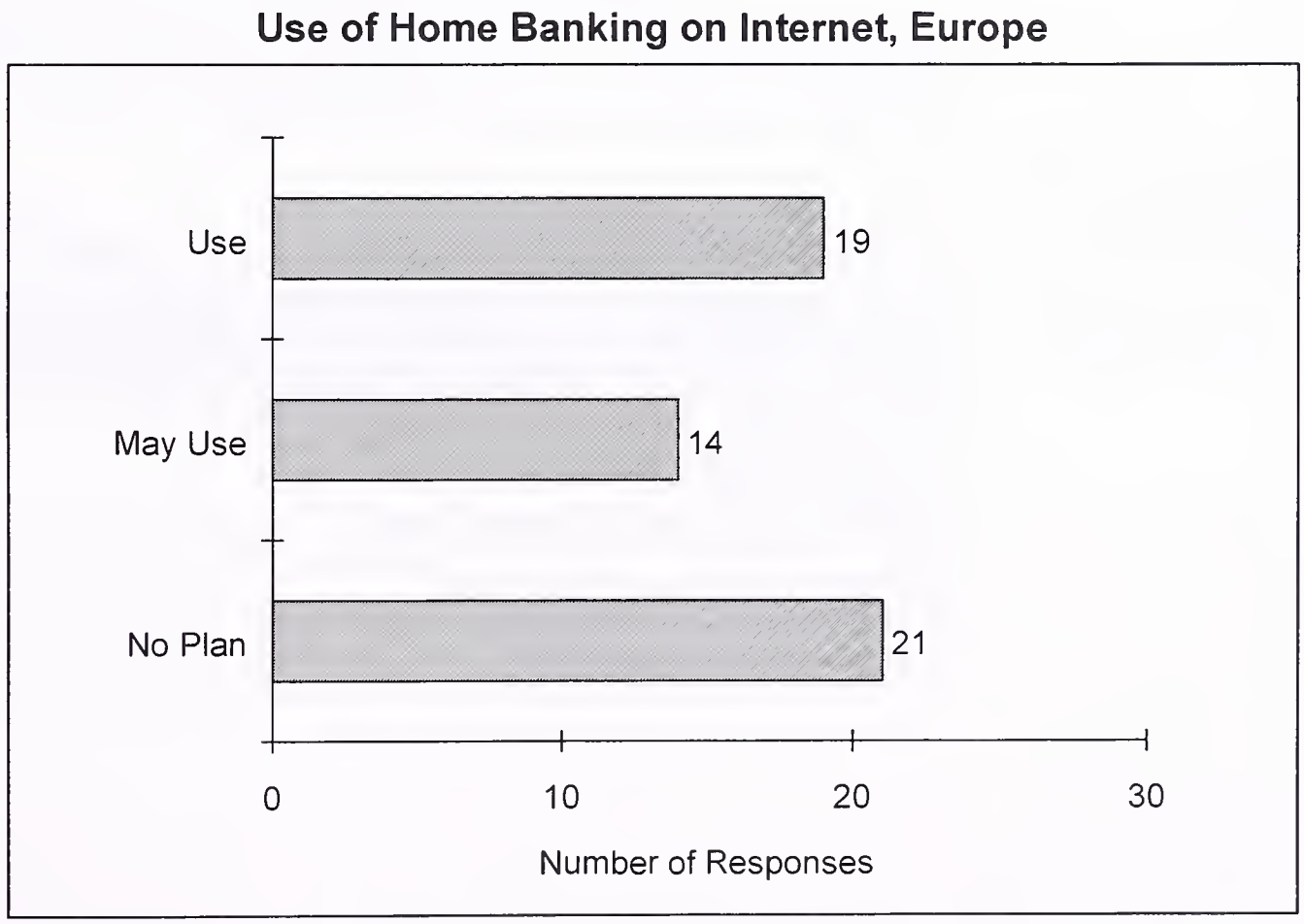

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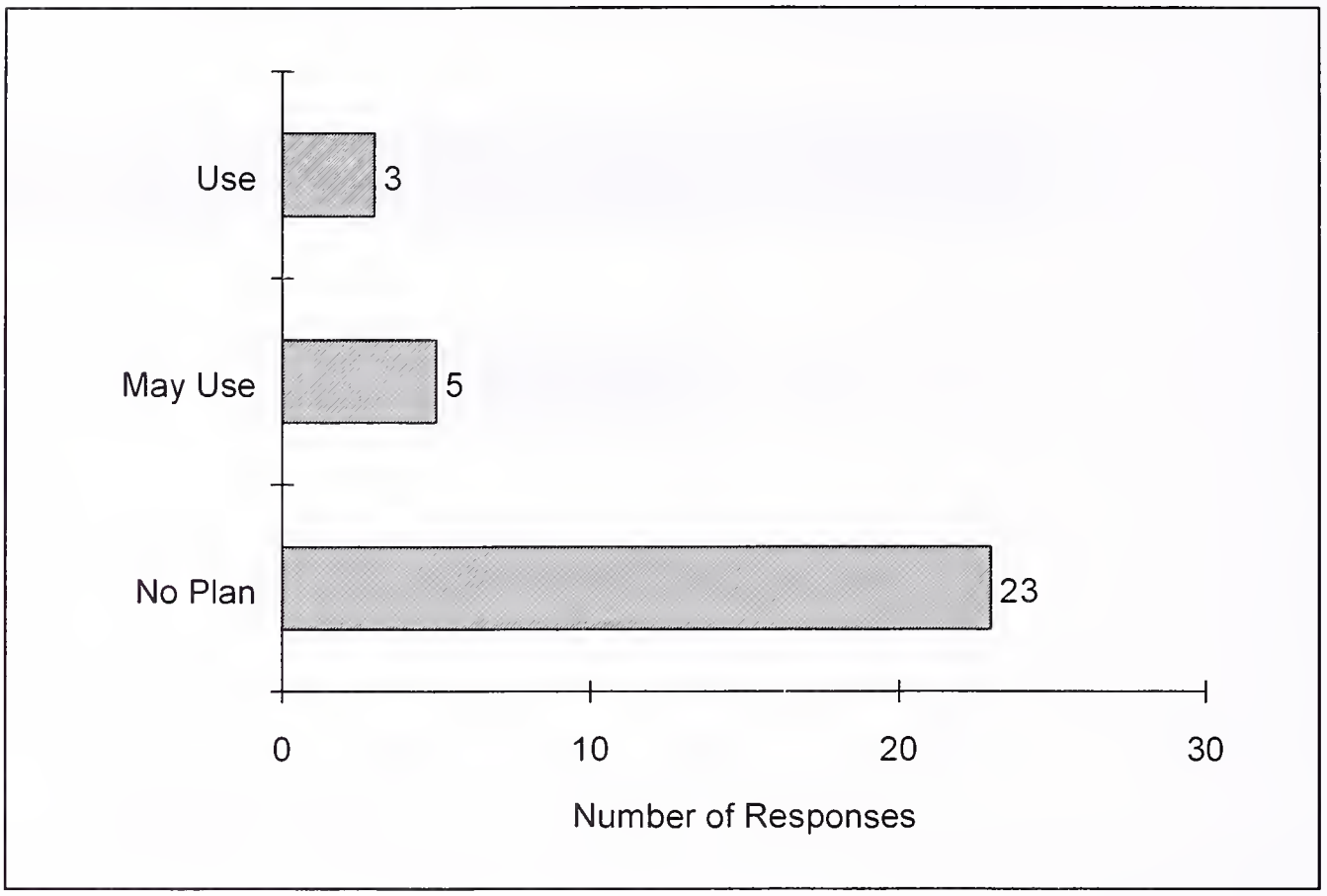
Exhibit III-14

Use of Internet Purchases With Credit Cards, Europe



Source: **INPUT**

An evaluation of the current importance of digital money products in planning, shown in Exhibit III-15, illustrates that retail banking bill payment is of high interest in the US and elsewhere.

Exhibit III-15

Importance of Digital Money Products/Services

Digital Money Example	Importance - US	Importance - Europe
Bill Payments: Home and PC Banking, Videotex, ATMs, EDI Payments	4.7	4.5
Money Transfer, ACH, SWIFT, GIRO	4.6	4.5
Smart , Stored Value, Debit Cards	4.3	4.3
Internet Payments, Transfers	4.4	4.1

Source: **INPUT**

Current estimates of the success of digital money products and services are shown in Exhibits III-16 and III-17. In both the US and Europe, digital money like E-cash, which is a vendor controlled product, is rated quite low. Whereas, the bank controlled product, like preauthorized debits/credits, is rated high.

Exhibit III-16

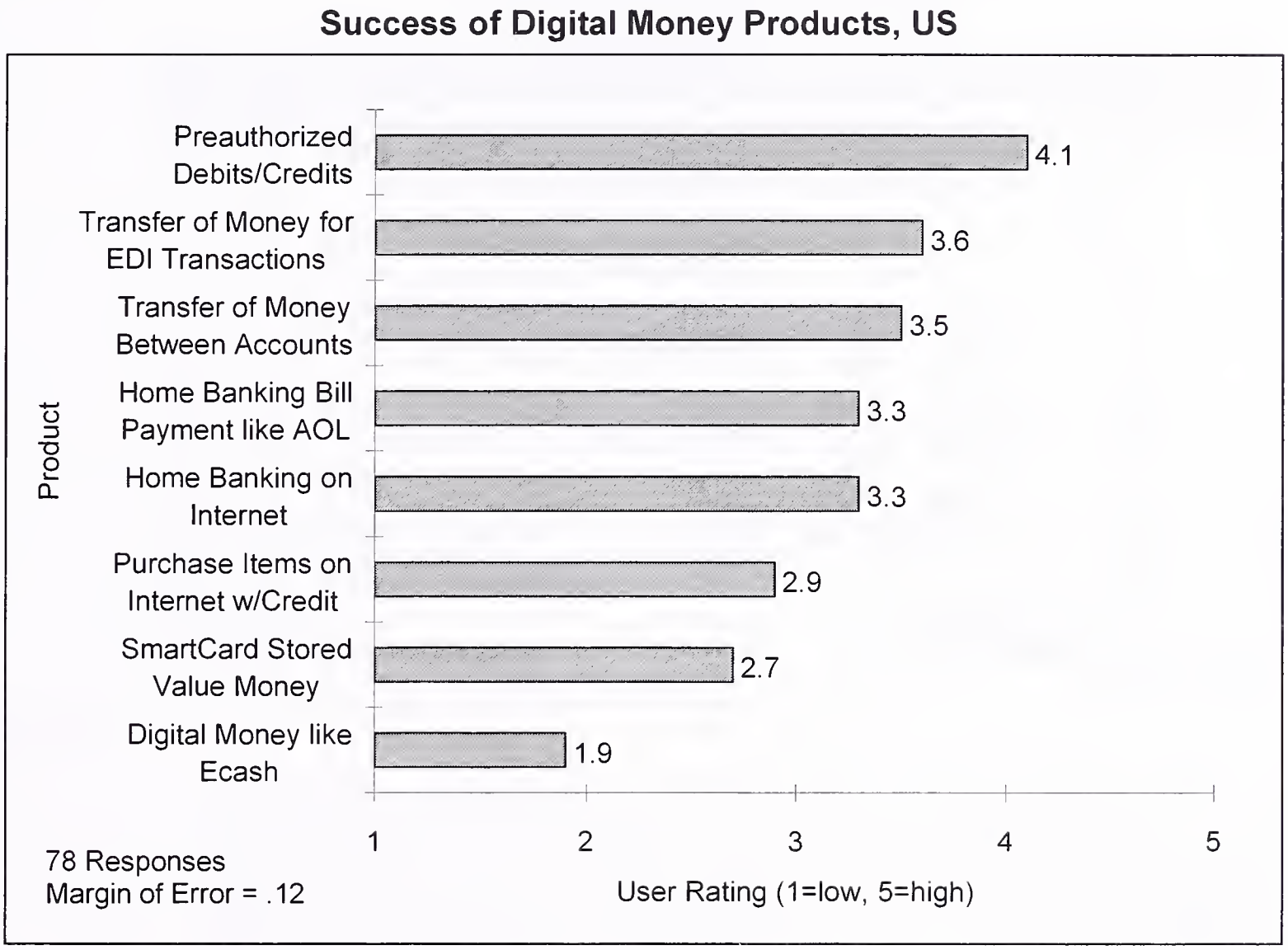


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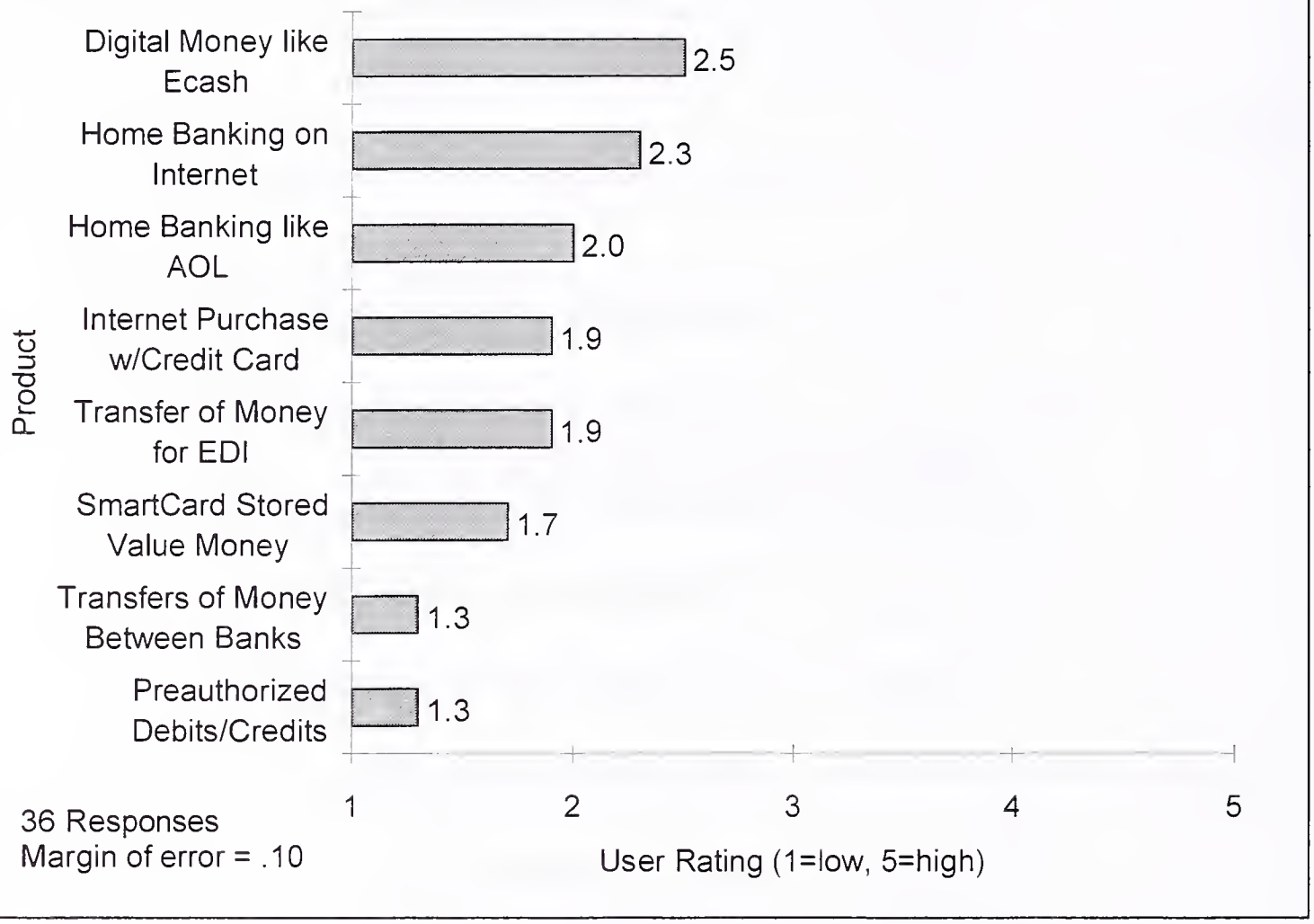
Exhibit III-17

Success of Digital Money Products, Europe



Source: **INPUT**

2. Forecast of Digital Money Use

Current estimates of the use of digital money by banks and forecast of usage in 1997 are indicated in Exhibit III-18.

Exhibit III-18

Forecast Use of Selected Digital Money Products/Services by Banks

Digital Money Use by Banks	Proportion of Banks Worldwide,1997	Proportion of Banks Worldwide, 2002
Money Transfer, ACH, GIRO or SWIFT Transactions	75%	95%
Bill Payments from PC, Videotex, Advanced ATMs and Terminal Entry	70%	90%
Credit/Debit Card Use to Transfer Value Electronically	65%	95%
Pay/Transfer Instructions Key Entered by Phone Operators	50%	60%
Use of Smart/Stored Value Cards	30%	70%
Use of Internet for Payment or Transfer Instructions	<5%	90%

Source: **INPUT**

Bill paying, account transfers and other "home banking" activity are initiated from hotel rooms, offices and other non-banking premise locations using a PC or terminal. They include the videotex systems that have been operational in France for over 12 years as well as PC banking systems using personal finance software.

- Some small firms use bill paying for individuals to generate digital payments from their firms.

- Several vendors such as Intuit that supply personal financial software for individuals now supply this type of software for small businesses as well.

- Credit card payments handled with paper items that are manually processed by banks were excluded from digital money by most banks.

Despite a much higher level of current usage in the first two types of transactions, the other concepts are also being put into use according to banks and banking vendors. Banks and vendors referred to the use of

Mondex and electronic tokens, coins or checks as illustrations of applications that have recently been implemented or are being planned.

The requirements or features that banks are most in need of strengthening to stimulate use of digital money focus on security and ease of use as shown in Exhibits III-19 and III-20.

Exhibit III-19

Features of Digital Money Products That Should be Strengthened, US

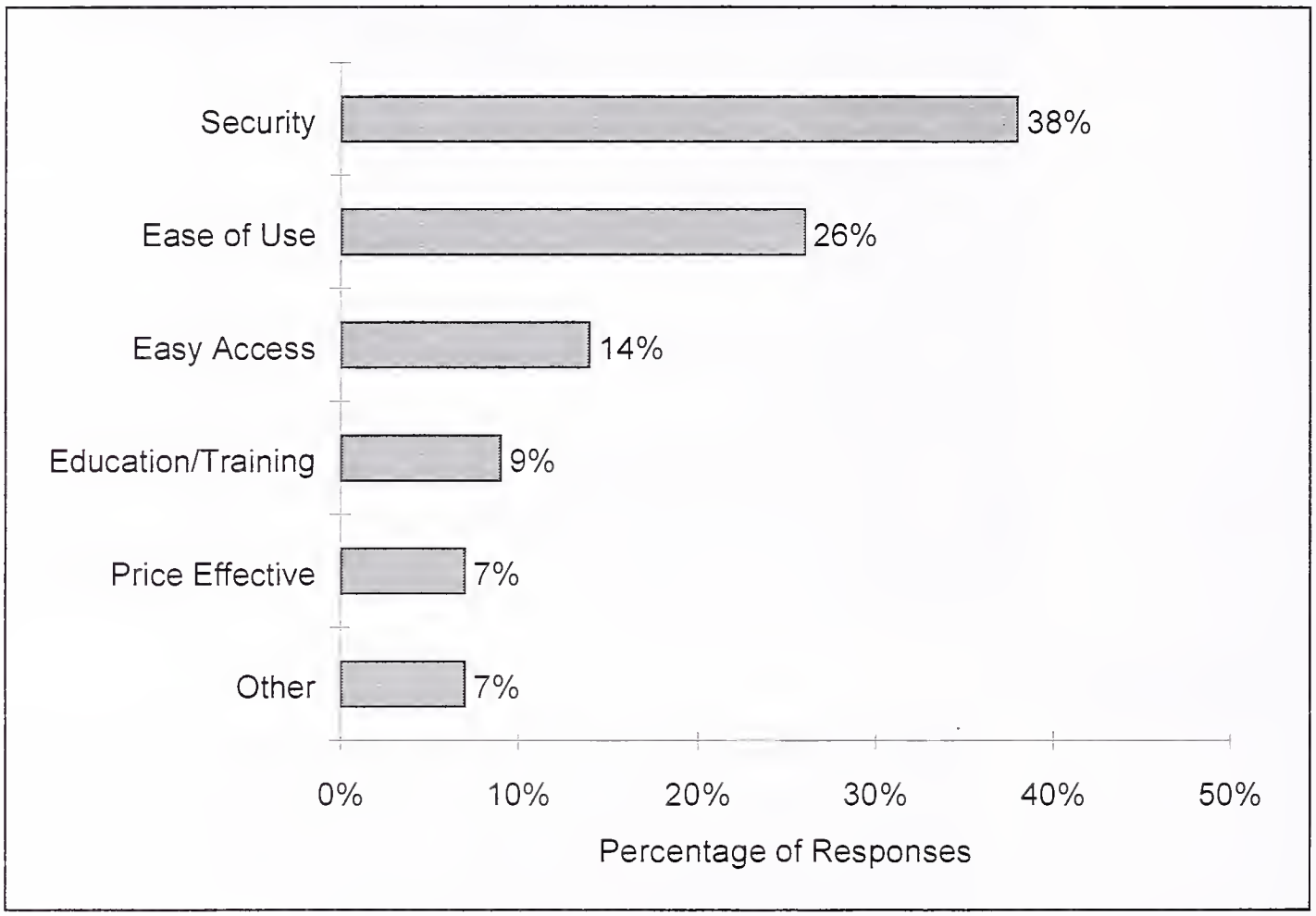


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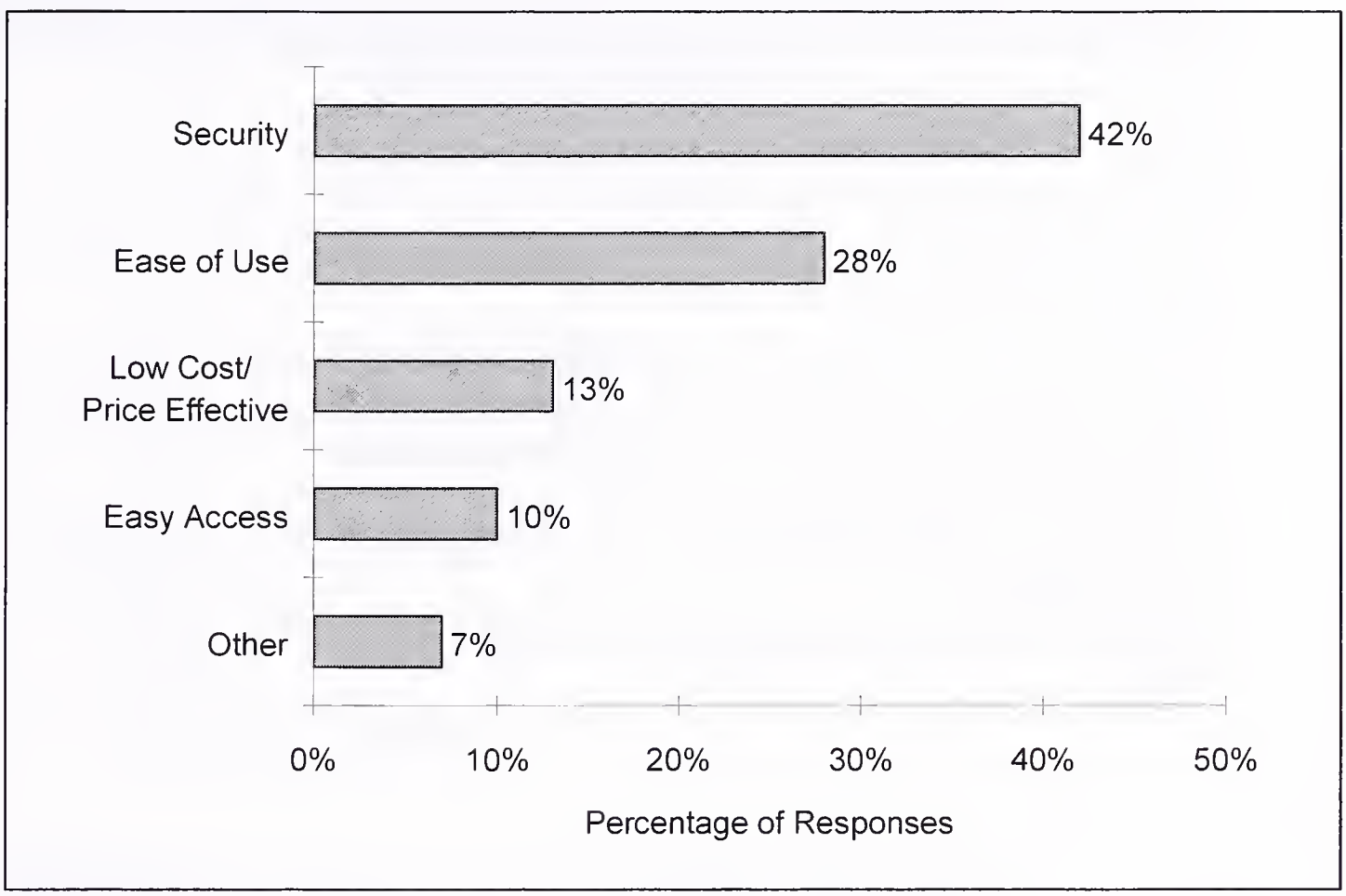
Exhibit III-20



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B

Trends and Drivers of Digital Money Use

Many banks point out that there has been a trend in banking to replace paper items with electronic items although the use of paper checks has continued to grow over the past decade. Banks report that other trends or drivers will be more effective in affecting customer use of digital money, however, such as the opportunity to reduce costs and save time in paying bills, obtaining cash or transferring funds. Other drivers also have an important impact as shown in Exhibit III-21.

Exhibit III-21

Trends and Drivers of Digital Money Use

Trends and Drivers Reported by Banks	Rating of Importance to Customers by US Banks	Rating of Importance by European Banks
Improved Aid in Preparing PC or Videotex Banking Transactions	4.3	4.1
Less Time to make Payments, Transfer Funds or Obtain Cash.	4.6	4.1
Less Cost to make Payments, Transfer Funds or Obtain Cash	4.1	3.9
Less Need to use Bank Branch	3.9	3.3
More Capabilities and Use of the Internet and Other Network Services	3.4	2.9
Convenience of Stored Value Card in Making Payments	3.1	3.5
Methods of Making Micro-payments on the Internet	2.6	2.1

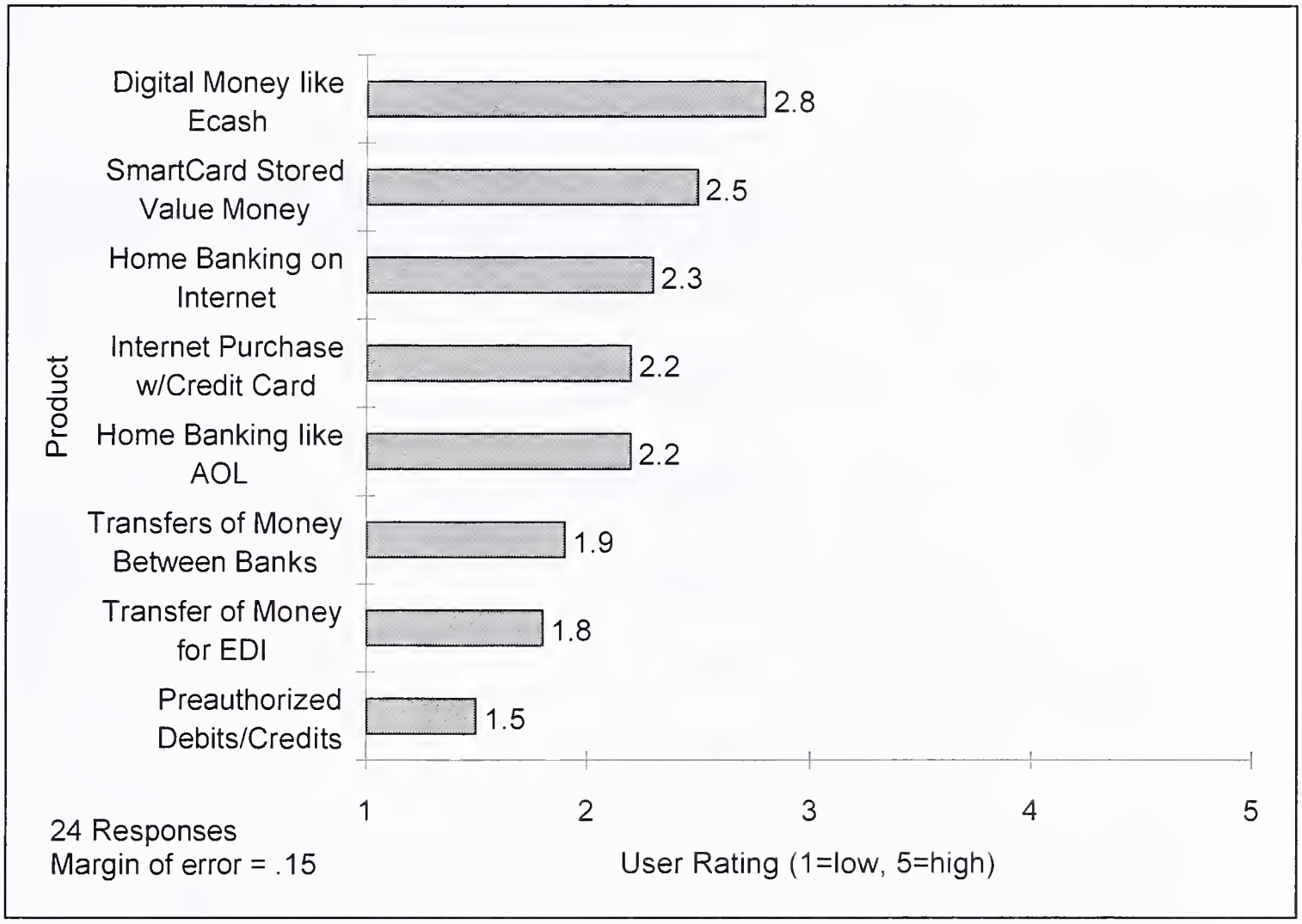
Source: **INPUT**

These trends or drivers seem more related to retail banking, although the observations on paying bills, transferring funds and use of the Internet apply to business as well.

Major vendors of software and services for retail banking such as Intuit and Microsoft are aware that aid in using digital money products or making them easier to use is essential to drive use of these products by consumers. Not all digital money products are considered easy to use as shown in Exhibits III-22 and III-23. The ratings describe the degree of difficulty for users of digital money products.

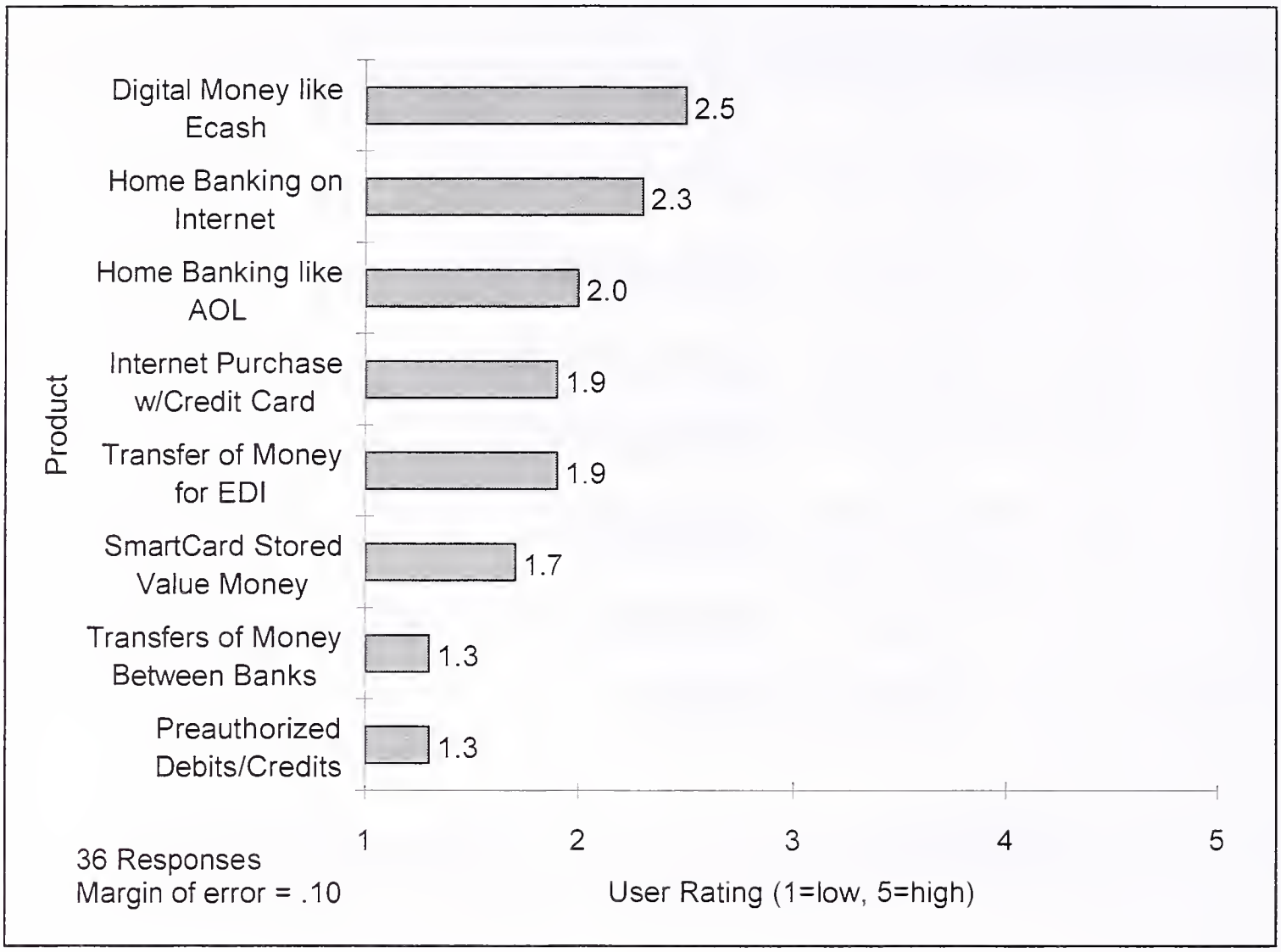
Exhibit III-22

Difficulty in Use of Digital Money Products, US



Source: **INPUT**

Exhibit III-23



Source: **INPUT**

The majority of banks question whether retail digital products have the features which consumers really need. Banks also realize that consumer demand for the products and competition will ensure their growth.

C

Impact of Digital Money Products/Services on Retail Banking Business

1. Current Impact on Retail Banking Business

Over half of banks worldwide report that use of digital money products is having an important impact on their retail banking business.

- Many banks feel these products/services will become as necessary for their retail banking business as other payment and savings products.

- Most banks report that increases in the number of customers and/or in customer activity are the main positive impacts or benefits from digital money products/services as shown in Exhibit III-24.

Exhibit III-24

Impact of Digital Money Products/Services on Retail Business

Product/Service Impact	Rating of Importance by US Banks	Rating of Importance by European Banks
Gain Accounts	4.3	4.1
Increase Lending, Deposit, and Other Revenue	4.3	4.2
Cross Sell Additional Services	4.1	3.7
Hold Present Accounts	3.9	3.3
Meet Demands of Clients	3.8	3.1
Generate Cost Savings	3.5	3.3
Support Marketing Image	3.5	3.1

Source: **INPUT**

Banks estimate that digital money products will drive the use of over $500 billion in incremental retail banking expenditures for lending, savings, investment and insurance business by 2002. Digital money products will also generate cost savings in check processing and other functions according to respondents.

- Digital money products and services can increase the volume of bank business by increasing the number of accounts, business per account and cross-selling opportunities.

- Banks reported that the increase in credit business generated by new customers attracted by digital money products/services was of greater interest than increases in revenues and fees generated by digital money products and services.

- The ability to increase business also depends on the ability of banks to hold present accounts, and banks report that digital money products can play an important role in holding accounts. Bank customers, who want the advantages of digital money such as the ability to pay bills from home or use stored value cards will tend to stay at their present banks if these services are implemented or just announced.

Meeting demands of clients for digital money products can be more complex than many banks recognize. Upscale customers who have

familiarity with technology and PC's at home and college are more apt to switch accounts to banks that have attractive digital money products like home banking with a personal financial software product or smart cards that can be down loaded with funds at a personal ATM if their present banks don't offer competitive products.

2. Impact on Future Retail Banking Business

Banks estimate that the major impact on retail banking from future developments in digital money will be benefits from home or PC based banking and changing ATM services as shown in Exhibit III-25.

Exhibit III-25

Impact of Selected Digital Money Products/Services by 2002

Digital Money Product/Service	Rating of Future Benefits, Worldwide
Home and PC Banking including Personal ATM Units and Videotex	4.3
ATM, Advanced ATM and Kiosk Services	4.1
Debit, Credit Card Related Transactions	3.8
Stored Value Cards, Particularly Cards That Can be Reloaded Easily	3.1
Products and Services Supporting Digital Money	2.6

Source: **INPUT**

Most banks report that it will be necessary to have many of these digital money products/services in order to gain or maintain lending and savings business with customers in 2002. Bank customers will feel that digital money is a necessary part of banking services.

As noted, some banks expect to profit or reduce costs by providing digital money services. Subsidiaries such as M&I Data as well as banks, including the bank members of Integrion, and banks that have invested in Mondex, recognize this opportunity.

3. Impact of Digital Money on Customer Services

Banks report that customers will expect more than just a set of digital products and features in the future. Customers are indicating that they expect the use of digital money to be accompanied with benefits and additional services as illustrated in Exhibit III-26.

Exhibit III-26

Impact of Digital Money on Service Expected by Customers

Impact on Service Expected by Banks	Rating of Importance to Customers by US Banks	Rating of Importance by European Banks
Means of Obtaining Balance and Other Account Information Rapidly	4.3	4.1
Help in Using and Investigating Problems in Home Banking and Other On-Line Systems	4.6	4.1
Low or No Cost Home Banking Services	4.1	3.9
Less Need to use Bank Branch	3.9	3.3
More Convenient Locations and Terminals for ATM and Stored Value Card Use		
More Services on the Internet	3.4	2.9

Source: **INPUT**

Some banks are already responding to these demands for improved services. Chase and Citibank have lowered home banking costs. These and other banks are providing improved access to account information. ATM units that can load stored value cards at home via a PC or in a public location are being planned and introduced.

4. Impact on Bank Functions and Costs

Digital Money products/services can generate savings as well as additional costs and work in retail banking functions according to banks as noted in Exhibit III-27.

Exhibit III-27

Impact of Digital Money Products/Services on Retail Bank Functions/Costs

Digital Money Impact Reported by Banks	Importance (US)	Importance (Europe)
Net Reduction in Branch Expenses	4.2	4.1
Additional Work and Costs in Operations Functions	3.9	3.6
Analyzing and Resolving Security Issues	3.8	3.8
Unanticipated Costs of Upgrading Products/Services	4.1	3.7
Loss of Business on Other Products/Services	3.7	3.3
Unanticipated Business Issues	3.1	3.5

Source: **INPUT**

Although branch activities and expenses can be reduced by digital money products/services, additional work and cost can be required in operations to support these products. Special operations and marketing units can be devoted to home banking, ATM networks, card use, phone center input of payment and transfer instructions and other uses of digital money. In addition, the digital money products/services that are launched may have to be upgraded sooner than anticipated since they may not as competitive or attractive to certain groups of customers as anticipated.

The new products and services may also have a negative impact on other products and services or require modification to meet business issues. For instance, some services that involve billing on the Internet must ensure that the billing process is not initiated prior to the process that delivers services.

The total impact of the costs and problems discussed will result in a lack of profitability of some digital money products/services at banks offering them. A small number of banks reported that they were quite concerned about the profitability of stored value cards, but most of these banks reported that it was too early in the use of these cards to come to any conclusions.

Banks reiterated that it appeared necessary to implement digital money products/services to gain and hold other banking business, particularly lending services and products.

5. Use of IT Service Providers for Retail Banking Digital Money Projects

Since IS staffs of banks generally do not have the experience and skills required for digital money projects, banks have relied on service providers in many situations. Their general satisfaction with service providers for this purpose has been high as indicated in Exhibit III-28.

Exhibit III-28

Satisfaction with Service Providers for Retail Banking Digital Money Project—Worldwide

Digital Money Product/Service	Satisfaction with Vendor IS Capabilities	Satisfaction with Application Support
Home or PC Banking	4.2	4.1
Expanded ATM Services Including Payments	3.9	3.6
Smart Cards	3.8	3.8
Call Centers and Pay by Phone	4.1	3.7
Expanded Debit/Credit Card Usage	3.7	3.3
Internet Based Services	3.1	3.5

Source: **INPUT**

In addition, banks over $10 billion in assets are likely to have multiple activities launched to utilize digital money that are not fully coordinated.

D

Impact of Digital Money Products/Services on Corporate Banking

The digital money products/services utilized in retail banking can help to increase the number of retail accounts of a bank and the revenue per account. The use of digital money products/services by banks for corporate banking customers are often necessary to hold the business of customers. However, banks that invest in improving these services for corporate customers report that they have also can have a strong impact on gaining corporate business.

The impact that digital money can have on holding or gaining corporate banking business is shown in Exhibit III-29.

Exhibit III-29

Impact of Digital Money on Corporate Banking

Product/Service Impact	Rating of Satisfaction Worldwide	Global Rating of Importance
Hold Lending Business	4.6	4.7
Increase Total Business From Clients	4.3	4.1
Reduce Costs	4.1	4.3
Increase Global/Regional Business	3.9	3.8
Improve Service	3.9	3.7

Source: INPUT

Digital money will have an increasing impact on corporate banking business in the future due to constant improvements in telecommunication technology and application systems.

IT service providers will continue to be involved in corporate banking since they will maintain areas of specialized knowledge that many banks will not want to finance. Several major banks noted that they would at least use IT vendors to provide continuing skills and knowledge involved with communication. The willingness to rely on vendors is encouraged by the current level of satisfaction with IT support provider services as shown in Exhibit III-30.

Exhibit III-30

Satisfaction with Corporate Banking Digital Money Service Providers

Type of Service/Product Being Supplied	Rating of Support From Provider, US	Rating of Support from Provider, Europe
BPR/Change Management	3.9	3.9
Business/Product Planning and Justification	3.8	4.1
SI and Other Development Services	4.1	4.2
Tools and Products	4.1	3.9
Support and Operations	3.6	3.7
Education and Training	3.6	3.5

Source: **INPUT**

Banks rate the support from service providers relatively high in regard to development services and digital money applications of vendors that can aid them to implement and offer products. Specific vendors and applications that were mentioned include Logica in money transfer and AMS in letter of credit and ALLTEL in relation to a set of integrated products.

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IV

The Impact of Digital Money on the IS Function In Banking

A
Impact on IS Planning and Resources

IS planning is only partially involved or not involved at all with general planning for the introduction of new or expanded digital money services according to over 70% of respondents.

- General planning for digital money products is generally conducted or directed by functional banking departments.

- The retail banking organization or product and market planning groups within it make plans for stored value and other digital money products.

The major impact on IS planning is to provide aid or support in relation to the changes in IT, particularly changes in telecommunications and automated systems necessary to support new or upgraded digital money products and services. This impact is reported to be most severe in relation to the expansion of ATM services as shown in Exhibit IV-1.

Exhibit IV-1

Impact of Digital Money Products on IS Planning

Bank Digital Money Project	Impact on IS Planning - US	Impact - Europe
Expanded ATM Services	4.3	3.9
Home or PC Banking	3.9	3.5
Smart Cards	3.3	3.5
Money Transfer, Swift, GIRO	3.2	3.4
Call Centers, Pay by Phone	3.1	3.2

Source: **INPUT**

Not only are the use of ATM systems expanding throughout the world, upgraded ATM systems that supply new features such as the ability to pay bills or obtain tickets or stamps at an ATM are being added.

- In addition, kiosks will be introduced and expanded in capability to provide a banking presence in a store or mall.

- Personal ATMs that download value to a stored value card and, in some cases, provide input capability for keying in payments have been announced.

- Reduced function ATMs that can load stored value cards in public locations or bank branches will expand in use in the next five years.

- IS planning personnel also mentioned that they will have planning challenges similar to those of ATMs to support the deployment of personal loan terminals.

Network and system planning tasks are being generated for the IS staff by plans for other digital money services, as well.

- Home or PC Banking (or Videotex) can have an effect on network capabilities as well as retail systems such as DDA and savings.

- Resources can also be spent on selecting and utilizing personal financial software (PFS) such as Quicken or Money. Much of the work that is involved in selecting PFS or implementing home or PC banking may be handled by outside vendors, however.

Many banks report that planning to implement the use of other retail banking products such as smart cards or computer based telephone services that key enter electronic items can often involve vendor as well as internal IS planning. IS planning in support of corporate uses of digital money is not reported to be as significant an impact since IS often has staff dedicated to these functions and is not "surprised" as often by the plans of banking departments.

In addition to the impact on planning activities carried on by the IS organization, the implementation of digital money products and services has an impact on the use of IS personnel and other IT resources necessary to support development and implementation as illustrated in Exhibit IV-2

Exhibit IV-2

Major Impacts of Digital Money Products on IT Use

Impacts Reported by Banks	Impact - US	Impact - Europe
Impact on Network Use (Including Internet)	4.5	4.2
Impact on Applications in Use and Planned	4.3	3.9
Impact on Need for IT Skills	4.2	4.0
Impact on Equipment Planning	4.1	4.3

Source: **INPUT**

Plans for digital money services and products will generally require changes to networks in use and/or the use of new networks such as the Internet as well as changes to applications in use.

- Digital money systems can have an impact on existing retail applications such as DDA, savings or CD investment or on applications serving corporate customers such as money transfer or corporate cash management.

- Digital money can also require that applications be moved to on-line systems that use new technology such as C++ or Java. IBM has aided German and US banks to provide capabilities that allow bank customers to obtain data from bank files to answer their own inquiries though an application developed in Java.

Finding skills to meet new IT needs can be just as much of a challenge to many banks as justifying expenditures for IT services or equipment.

B
Impact on IS Expenditures

Due to a high level of current interest in the expansion of home, Videotex or PC banking, ATM use and stored value cards, digital money is now having a much greater impact on retail DDA applications than on other areas of retail banking such as mortgage or personal loan.

- Digital money does have an impact on mortgage and personal loan since automatic or pre-authorized payments can be made for these functions, but systems are in place for these applications in many countries.

- Banks also report an impact on retail CIF applications from digital money products, as indicated in Exhibit IV-3 since CIF provides linkages of information between retail applications.

Exhibit IV-3

Impact of Digital Money Products on Retail Banking Applications

Application Area Impacted	Worldwide Rating of Impact Reported by Banks
DDA (Checking) Applications	4.6
Retail Customer Information File (CIF)	4.3
Savings and CD Applications	3.5
Other Retail Applications	3.1

Source: **INPUT**

In addition to the impact on applications, banks report that digital money applications can have a considerable impact on files, particularly DDA files, in order to handle on-line functions. These applications are also very likely to have a considerable impact on retail CIF files since these files maintain records of customer accounts and use of products.

There is not as much introduction of new products taking place with corporate banking systems since these systems have depended on on-line functions for a longer period of time, and they have been improved on a regular basis in the last decade to enhance the use of digital money.

- Retail digital money products such as "home banking" have been used for a shorter time by most banks, than corporate banking applications (for banks that offer both).

- However, there are regular improvements in corporate banking digital money systems to take advantage of new telecommunications technology or new techniques of handling functions, and these improvements can have a significant impact on applications in use at banks undergoing change.

On the average, digital money corporate banking applications are receiving less attention at banks, and they are less likely to be experiencing the impact that retail banking applications have encountered from the increased use of digital money.

- This can be seen by comparing Exhibit IV-4 which follows, with the previous exhibit. The importance of digital money in regard to the impact on retail DDA applications is rated much higher than the impact on corporate applications.

- In addition, a number of banks emphasized that their chief concern with the use of digital or electronic money was its impact on retail banking applications versus corporate banking applications.

Exhibit IV-4

Impact of Digital Money on Corporate Banking Applications

Corporate Banking Applications	Impact, US	Impact, Europe
Money Transfer/International MT	4.2	4.0
Corporate Cash Management	4.1	3.9
Corporate Trade Payment/Letter of Credit	3.7	3.9
Corporate CIF	3.9	3.8
Other Corporate Banking Applications	2.9	2.6

Source: **INPUT**

For individual banks in the US, Europe or other regions of the world, the impact of digital money on existing applications can be increased by a lack of planning and/or research on changes taking place in banking or in the use of technology as illustrated in Exhibit IV-5.

Exhibit IV-5

Factors That Can Increase Impact of Digital Money on Existing Applications

Impact Reported by Banks	Rating of Importance, US Banks	Rating of Importance, Europe
Lack of Network Planning	4.2	4.1
Mixed Legacy and New Application	3.9	3.6
Lack of Research on Digital Money	3.8	3.7

Source: **INPUT**

About half of bank respondents report that the introduction of digital money has been hindered by the lack of planning and research on digital money products and network capabilities mentioned in the last exhibit. This has resulted in considerably more change to or replacement of existing applications as well as the use of vendor application systems.

Since the use of digital money is expanding more rapidly in retail banking currently, budgets in IS are showing much more impact from retail banking functions as illustrated in Exhibit IV-6.

Exhibit IV-6

Impact of Digital Money Products on IS Budgets

Digital Money Product	Impact on Budgets - US	Impact - Europe
Expanded and Changed ATM Services	4.3	4.5
Home or PC Banking	4.2	4.1
Corporate Banking Use of Digital Money	3.3	3.6
Smart Cards	3.8	3.8

Source: **INPUT**

Although there is more interest in many banks about the use of digital money in "home" or PC banking systems, the budgetary impact of changes, upgrades and expansion to ATM networks and devices is expected to be greater. This could be true even if the use of ATMs change so that they are mostly handling off-line loading of value into stored value cards according to several bank planners.

C

Impact of Digital Money on IS Organization

The need to respond to competition or meet demands of customers in regard to the use of digital money, which functional bank departments report, is having an impact on bank organizations as indicated in Exhibit IV-7.

Exhibit IV-7

Impact of Digital Money on IS Organization

Impact Reported by Bank	Importance, US	Importance, Europe
IS Personnel Assigned to Functional Department of Bank	4.1	3.9
Bank Departments Use IT Vendors Instead of IS Personnel	4.1	3.6
Bank Users Develop Pools of IT Skills	3.9	3.6
Users or IT Vendors Have Project Management Responsibility	3.8	3.6

Source: **INPUT**

The use of digital money is moving power and personnel away from the IS organization. This is being driven by the need to respond to

opportunities and competitive action as well as by the fact that IS has not had the time or resources to devote to digital money products or technology in many banks.

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V

The Impact of Digital Money on Use of Service Providers

A
Support Provided by Service Providers

Digital banking has led to greater use of IT service providers according to banks. There is great need for telecommunication and specialized software skills, such as Java, which many banks report that they cannot satisfy internally. There is also need for additional types of assistance with digital money projects which service providers are offering and being asked to supply to banks as illustrated in Exhibit V-1.

Exhibit V-1

Impact of Digital Money on Use of Service Providers

Impact Reported by Banks	US	Europe
Provider Involved in Product and Business Planning	4.3	3.7
Provider Involved in Development and Implementation	4.1	3.9
Provider Involved in Operations and/or Marketing	3.7	3.1

Source: **INPUT**

The high level of interest in using IT service providers for digital money products is based on the knowledge and experience of the market and products which banks attribute to the vendors. Service providers are often consulted or used by banks to plan their digital money offerings since they have relevant market and product knowledge.

The vendors that were mentioned by banks in relation to specific digital money products/services include DigiCash, Cybercash, Checkfree, Microsoft, Mondex, NCR, NTT, NTT DATA, Siemens Nixdorf, Toshiba and Unisys.

A number of vendors were mentioned in relation to digital money products despite significant other work in banking applications.

- Unisys was mentioned in relation to its support of Mondex rather than its relationship to major projects with European and American banks.

- IBM was mentioned chiefly in relation to planning, implementation and use of the Integrion Financial Network which supports applications of a consortium of 16 banks. IBM and the 16 banks are owners of the organization, which plans to handle retail banking including digital money applications of banks that are not members on a fee basis.

SI vendors with experience in digital money products such as Andersen Consulting, Unisys and EDS are also active in implementation due to their network and banking skills as well as the fact that they can respond to needs rapidly. The major reasons reported by the banks as to why vendors are used for digital money implementation are indicated in Exhibit V-2.

Exhibit V-2

Reasons Banks Use Vendors For Digital Money Implementation

Reasons Reported by Banks	US	Europe
Bank IS can not Respond Rapidly to Needs	4.3	3.9
Service Provider has Digital Money Products or Product Components	4.1	3.9
Provider Has Knowledge and Experience	4.1	3.9
Provider can Start Immediately	3.7	3.1
Provider Maintains up to date Knowledge on Product Improvements and Competition	3.4	3.1

Source: **INPUT**

Companies with specialized skills in telecommunications including the use of the Internet or experience developing firewalls, such as Netscape and Control Data, were also among the IT vendors mentioned by banks.

In addition to being able to respond to rapidly growing needs for digital money assistance, some IT service providers have developed the capabilities shown in Exhibit V-2 in order to support initiatives of their own when opportunities present themselves. Netscape, Cybercash and Checkfree have engaged in activities in electronic commerce that led to future digital money product development. IBM, Toshiba and other vendors have also taken steps in support of banking and electronic commerce that led to future offerings.

B
Using Service Providers for Additional Purposes

The strengths and plans of service providers with digital money applications are causing banks to consider more extensive relationships with them in the future as shown in Exhibit V-3.

Exhibit V-3

Possible Future Relationships With Digital Money Service Providers

Possible Bank Relationship With Vendor	Relative Importance Worldwide
Partnering Arrangements	4.5
Establishing Favored Providers for Digital Money Projects	4.3
Using Standard Bid Process that Favors Providers with Capabilities	3.6
Using Marketing/Support Services of Service Provider	3.2

Source: **INPUT**

Banks report that partnering not only provides a source of aid for future development tasks, but also establishes a relationship for planning and evaluating the possibility of success for digital money offerings. It also establishes a source of information on competitive products and technology that could aid in diagnosing when current products become outmoded or un-competitive or in uncovering opportunities that might be overlooked.

Since IT vendors are knowledgeable and interested in opportunities arising from the expanded use of digital money, some banks feel apprehensive about competition that vendors might initiate.

The concerns reported by banks about vendor influence on products are summarized in Exhibit V-4.

Exhibit V-4

Bank Concern About Impact of Vendor on Digital Money Products

Bank Concern About Vendor	Rating of Importance, Worldwide
Vendor Can Sell Competitive Products to Bank Clients	4.6
Vendors May Add Changes to Product Developed for Bank Use With Clients	4.3
Vendor May Dictate Use of Products Developed to Support Digital Money	3.6

Source: **INPUT**

Banks are also concerned about the support, control of changes, and charges that IT vendors might impose since they could be dependent on vendor services. Some banks report they are also uncertain about what charges could be passed on to customers.

- Banks do feel that a relationship with vendors such as a partnership could provide some protection against this.

- A group of large banks pointed out that banks had to be ready to respond to actions of service providers since it is easier for them to launch competitive actions.

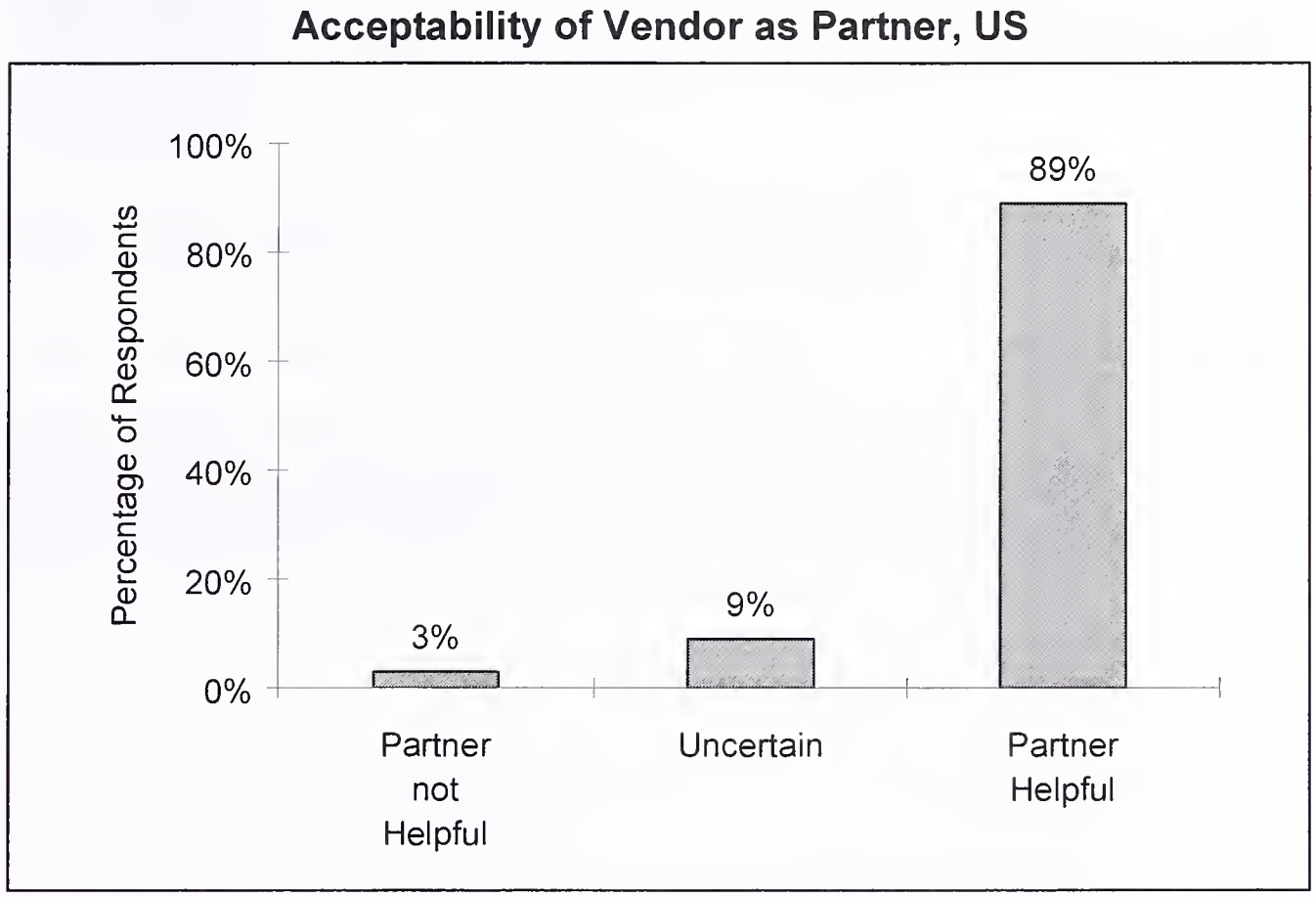
As an illustration of actions that banks might have to take, several banks pointed out that banks which promote the use of personal finance management software (PFS) such as Money or Quicken with home banking could find that the PFS vendor was able to sell financial services to bank clients or obtain names of banks interested in such services by imbedding instructions for obtaining information in the PFS product.

- The banks who are members of Integrion have guarded against this by using an Intranet to control communication between banks and customers that involves use of third party software or services.

- Several other banks are using the Five Paces software of First Security in place of PFS like Quicken or Money since it provides more control of actions by vendors.

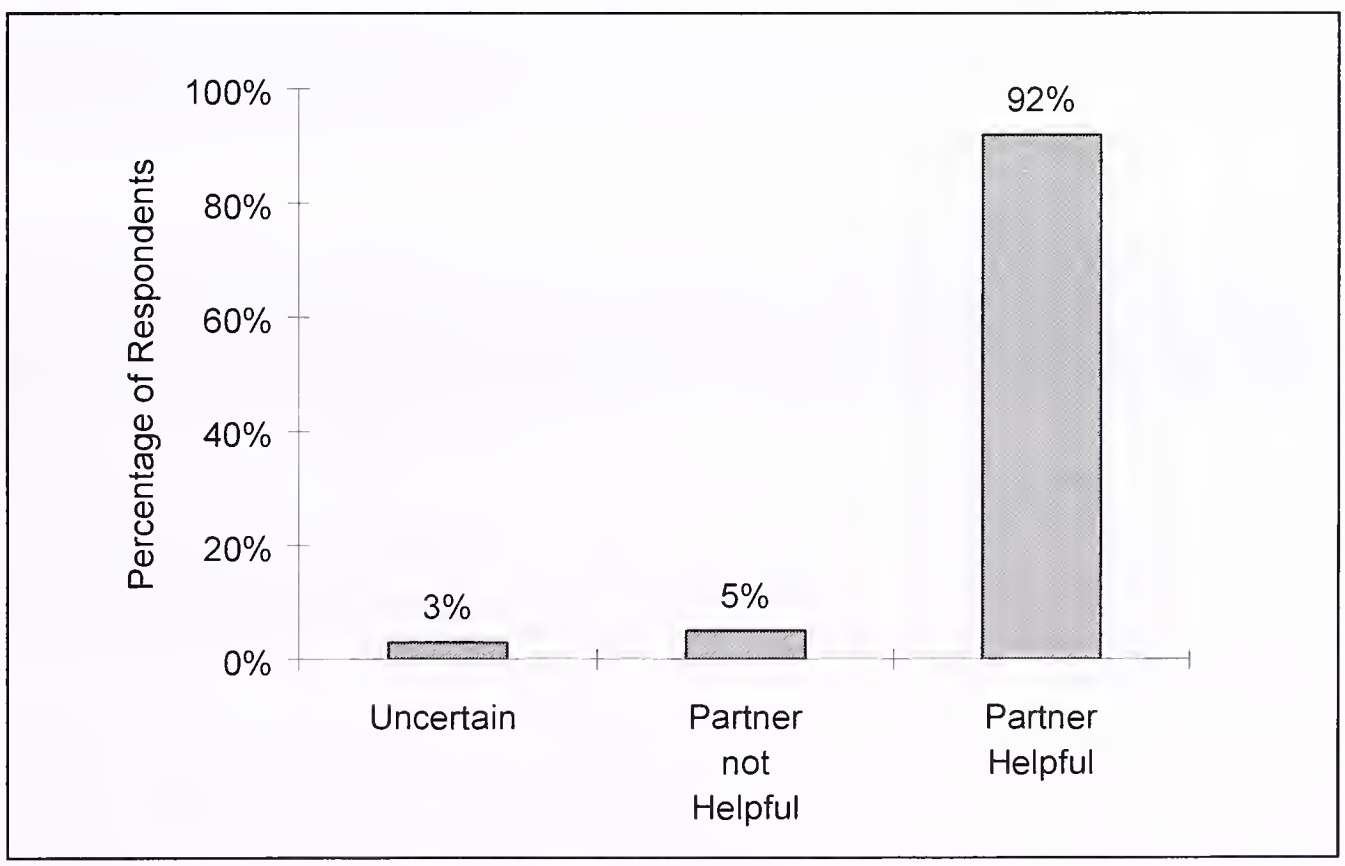
Despite concerns about using vendors as partners, a majority of banks favor these arrangements, as shown in Exhibit V-5 and V-6.

Exhibit V-5



Source: **INPUT**

Exhibit V-6



Source: **INPUT**

C

Selection Criteria for Use of Service Providers

Requirements that banks use to compare vendors being considered for digital money projects emphasize relevant experience and skills, shown in Exhibit V-7. Experience in the implementation of digital money products had the highest mean rating in the US and in Europe.

Exhibit V-7

Requirements for Support from Digital Money Service Providers

Requirements Reported by Banks	Importance, US	Importance, Europe
Experience in Implementing Digital Money Products	4.5	4.3
Skills in Communication and Special Equipment Such as ATM Units	4.3	3.9
Experience with Software Selected for Application Development	4.3	3.7
Personnel Availability	3.9	3.9
Experience with Banking Systems	3.3	3.5

Source: INPUT

The requirements describe above apply to IT vendors being evaluated only for aid in the development and implementation of digital money projects.

VI

Partnering with Service Providers to Support Digital Money Products

A
Acceptability of Partnering Relationships

A shortage of necessary skills in internal IS groups to support digital money projects has placed pressure on banks to find capable service providers. In addition to seeking aid for specific project assignments, a number of banks were also interested in a partnering relationship to gain additional aid in planning, marketing and supporting digital money products. The factors which banks report as most important in relation to the use of partnering are shown in Exhibit VI-1.

Exhibit VI-1

Factors Driving Use of Partnering by Banks for Digital Money Products

Factors Reported by Banks	Impact Reported, US	Impact Reported, Europe
Need for More Extensive Planning for Digital Money Products	4.2	3.8
Shortage of Relevant Skills in IS Staff	4.1	3.9
Most Cost Effective Means for Digital Money	3.9	3.9

Source: **INPUT**

Banks report that the use of partnering has made them less reliant on proprietary products developed by internal groups. They are more willing to use products known in the marketplace such as Checkfree payment services or Mondex cards. Ideally, several banks noted, they want products used in the marketplace which they can personalize for customers. This attitude is reflected in the impact which banks report partnering is having on their digital money offerings as indicated in Exhibit VI-2.

Exhibit VI-2

Impact of Partnering on Use of Digital Money

Impact of Partnering on Digital Money Offerings as Reported by Banks	Average Impact - US	Impact - Europe
Less Reliance on Internal IS	4.5	3.9
Bank Uses Standard Products	4.2	3.9
Vendor and Bank Names Associated with Product	3.6	3.1

Source: **INPUT**

B
Bank Requirements for Support Partners

Banks report that service providers under consideration for partnering arrangements must have certain strengths or capabilities as illustrated in Exhibit VI-3. The requirements for partnering arrangements are more extensive for partnering then for support on projects.

Exhibit VI-3

Bank Requirements for Partnering Arrangements

Requirement Reported by Banks
Knowledge and Experience With Digital Money Technology
Can Aid in Planning Products
Availability of Products and Services for Implementing Digital Money Products
Ability to Aid Bank to Market and/or Support Digital Money Products
Ability to Help Bank Reduce or Control Bank Costs
Can Help Bank Stay Up to Date

Source: **INPUT**

Banks are seeking partners who have demonstrated both capabilities and willingness to aid with digital money projects. Aid in sales and marketing or support for sales activities are a highly important aspect of the aid that interest banks as indicated in Exhibit VI-4.

Exhibit VI-4

Potential Impact of Partnering on Marketing of Digital Money Products

Impact Reported by Banks	Importance - US	Importance - Europe
Vendor provides direct aid in Selling and Marketing	4.2	3.7
Product Image Transcends Bank	4.1	3.8
Vendor Provides Sales Support	3.8	3.6

Source: **INPUT**

Vendors have been very active in helping to sell and support the sales of digital money products as Mondex has been with a number of banks, DigiCash has with Mark Twain Bank, and America Online has been with the BankAmerica home banking product. Earnings and product success for the vendor may depend on aid provided to banks.

The important aspect of the marketing or product advertising done by vendors is that it is more suited to the nature of digital money product than bank advertising can be in many situations. The product image supplied by Intuit for Quicken has helped to sell home banking according to some banks.

Bank respondents report that some partnering arrangements have caught their attention. The ones most frequently mentioned are shown in Exhibit VI-5.

Exhibit VI-5

Partnering Arrangements That Have Gained Bank Attention

Arrangements Reported by Banks	Rating of Importance
Mondex Relationships with Banks	4.2
Integrion Relationship: IBM and 18 Banks	3.9
Checkfree Payment Arrangements with Banks	3.8

Source: **INPUT**

Mondex is perceived as a partner that can aid banks by providing a smart card with an image that is worldwide as well as providing assistance in planning a smart card offering. Some banks acknowledge that they want to have a relationship with a vendor which has received attention for its digital money products. Other banks have emphasized that the most important concern is having a relationship with vendors who can aid with planning, development, implementation and emergency support activities.

An interesting type of partnering is exhibited by the arrangement IBM has with a group of major banks called Integrion (Integrion Financial Network). Integrion is a limited liability company, owned by 18 banks and IBM, that has created worldwide attention since it was launched in September, 1996. Additional banks and other organizations may become members, and Integrion will sell services to banks. Goals for the undertaking focus on the environment that banks now face in consumer banking as shown in Exhibit VI-6.

Exhibit VI-6

Goals of Integrion for Bank Members

Goal	Means
Take business back from non-banks	Utilize better on-line product capabilities
Have access to broad on-line market	Full coverage of North America
Reduce time to market and cost of on-line products	Common approach to development and shared costs
Maintain open industry standards	Develop and promote standards
Allow each bank to retain client control	Bank maintains own brand and relationships
Control security and access to customers	Use an Intranet run by IBM

Source: **INPUT**

Bank members of Integrion Financial Network (IFN) point out that they are not limited in using other products or networks, since they are only committed to pledging 50% of their electronic transactions to the IFN network.

- KeyCorp, one member of Integrion, has stated that it will maintain other options for providing on-line services.

- Some members of Integrion report they will use Quicken and/or Money as well as the Meca product that will be pilot tested for home banking on IFN at NationsBank and BancOne.

Members point out that they will profit greatly from the fact that a family of products will be provided through the Internet and private networks including home banking, electronic bill presentment and payment, stock quotes, account information, funds transfer, security transactions , loan application and electronic cash in conformance with a common standard.

Since members comprise 23% of the banking assets in the US and Canada and about one-half of the consumer population or 60,000 households, the members feel confident that they have a strong position in assuring that on-line standards for products will conform to those of Integrion, the Gold Standard. Since the announcement of this standard, the backers of OFX have announced that they see no problem conforming to the Gold Standard.

There is a comprehensive plan scheduling implementation of the 18 members of the Integrion over the next year. Other banks, who decide to use the services ofd Integrion, will be implemented at a later date. IBM currently has 200 people assigned to development. (The Integrion organization only has 16 people, which will expand to 25 by the end of 1997.)

Despite the capabilities of IBM and the banks involved in Integrion, there can be delays in networking projects that involve change in retail banking systems.

- Banks who are members of Integrion or potential customers may decide to develop interim systems for home banking or other on-line applications.

- Members of Integrion may feel that expenditures for interim systems or capabilities to meet customer demands represent double expenditures, since they have also invested in Integrion.

Citicorp, as well as several other banks and IT vendors, feel that Integrion may limit the progress that banks could make by using the available time for research into the use of new technology. The members of Integrion will be so involved in implementation and exploration of systems in development that they will not have time to work with new vendors on developments in telecommunications to take advantage of new technology.

IT vendors and some banks question the heavy reliance on IBM. Integrion is using the IBM Global Network to provide the Intranet it will use. IBM is the preferred provider of services to Integrion. However, IBM has agreed to provide Integrion exclusive rights to the use in North America of the interactive financial services (IFS) that will be delivered via the IBM Global Network.

Integrion will also retain rights to the middleware that connects front-end access from the consumer to the banks' backend systems.

IBM is playing a critical role but the banks that are members of Integrion are active participants in planning. Some are playing leading roles such as NationsBank and BancOne, who will have pilot installations.

VII

Digital Money Market Issues And Recommendations

A
Challenges that Can Impact Digital Money Usage

Digital money products present significant challenges to banks as well as opportunities. In addition to gaining customers and additional revenue, banks can spend large amounts on projects that do not produce expected benefits or satisfy clients as indicated in Exhibit VII-1.

Exhibit VII-1

Challenges That Can Adversely Impact Digital Money Products

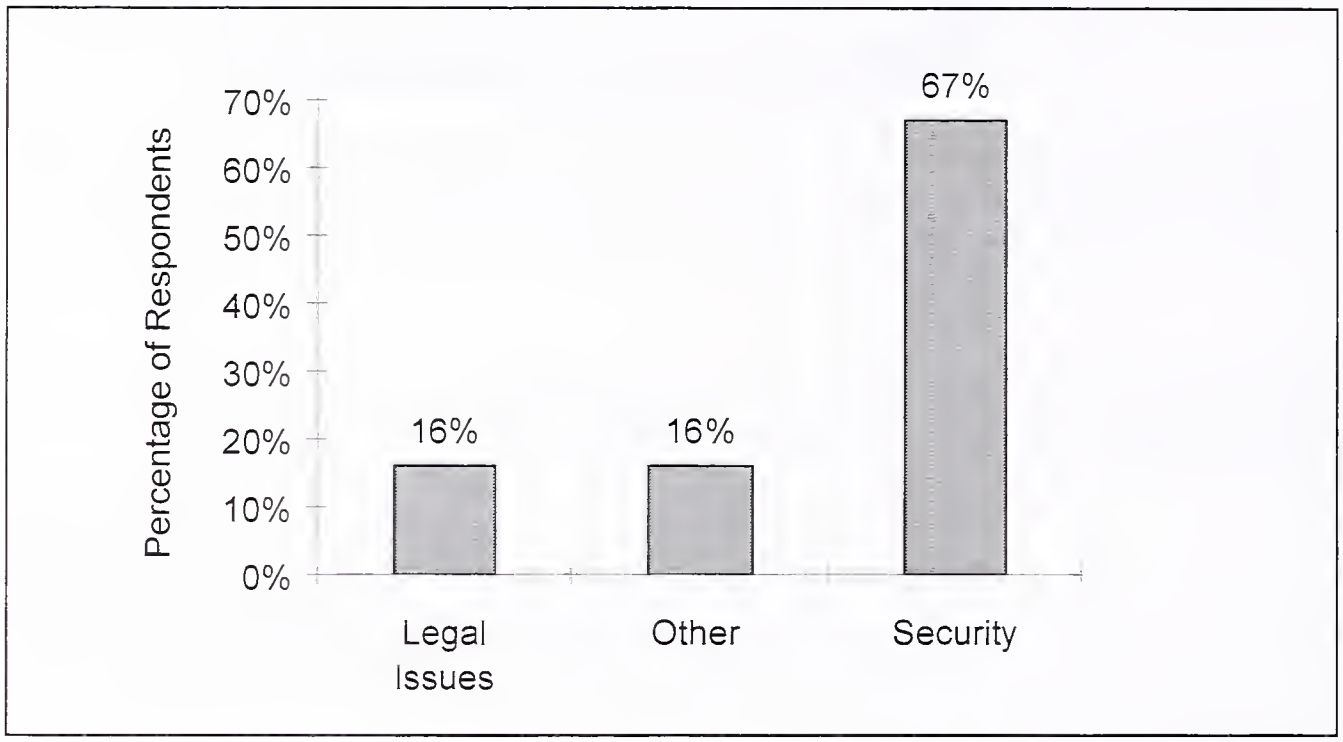
Challenges Reported by Banks	Specific Issues or Concerns
Planning Digital Money Products	Selecting products, developing forecasts for products, determining pricing strategy.
Implementing Digital Money Products	Selecting digital money solutions, determining support required for users
Obtaining Skills and Resources to Develop and Support Digital Money Products	Selecting service providers, determining relationship to have with providers
Researching Security and Standards Issues	Determining what sources to consult and work with

Source: **INPUT**

Security is one of the major problems that can affect the acceptability of digital money products, as shown in Exhibit VII-2 and VII-3. Security and legal problems are felt to be much more significant for Internet applications than for home banking.

Exhibit VII-2

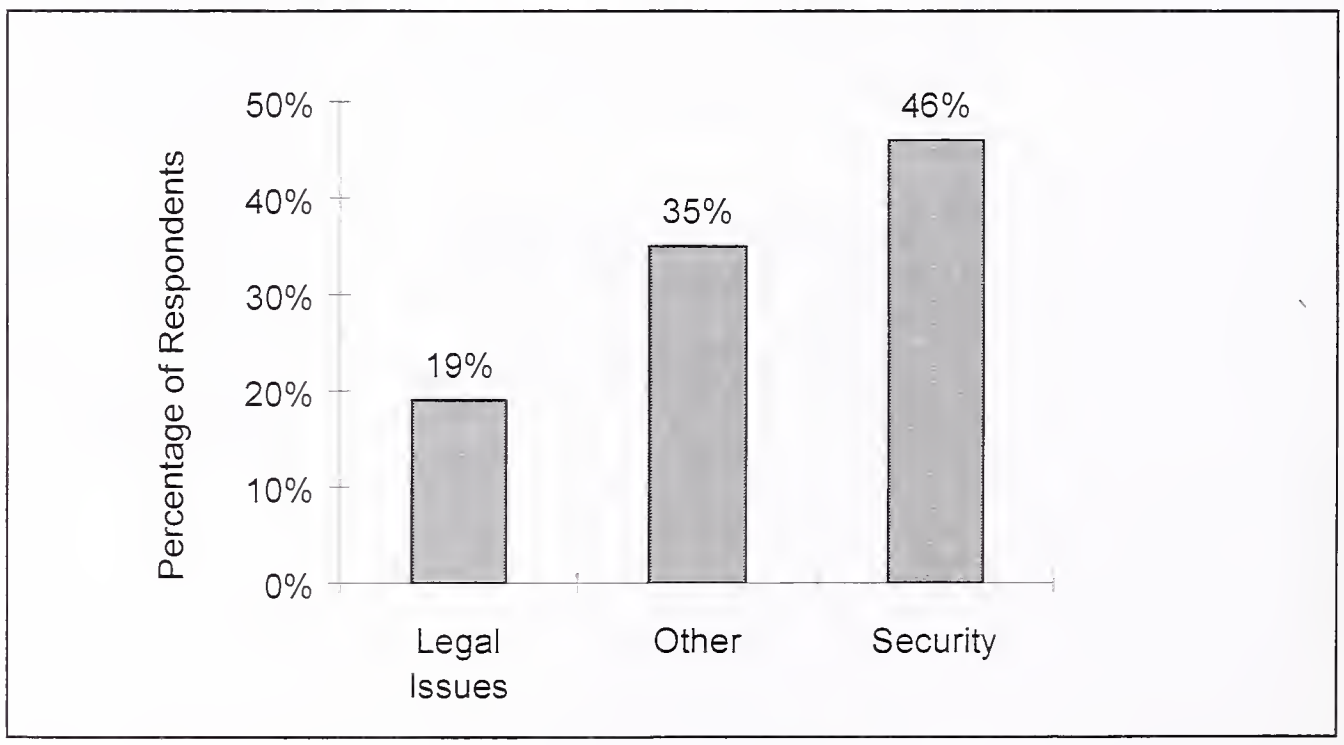
Factors That Can Affect Acceptability, US



Source: **INPUT**

Exhibit VII-3

Factors That Can Affect Acceptability, Europe



Source: **INPUT**

Banks may not have the resources available to adequately address these issues or be prepared to utilize IT service providers to meet needs. Many banks have learned to call upon service providers to aid in the development or implementation of digital money systems, and they are rapidly learning to rely upon vendor knowledge and experience to help plan and make these products and services a commercial success. The importance that service providers are given in relation to their ability to help banks in relation to these challenges is indicated in Exhibit VII-4.

Exhibit VII-4

Importance of Service Providers in Support of Digital Money Products

Capabilities Offered by Service Providers	Relative Importance, Worldwide
High Level of Knowledge and/or Experience with Digital Money Products	4.5
Provider Offers Digital Money Products or Components of Products	4.3
Up to Date Knowledge on Product Improvements and Competition	4.1
Ability to Aid with Marketing and Support	4.0

Source: **INPUT**

Even though many banks are aware of the knowledge and experience of service providers with digital money products, they are not always called upon. Some banks admit that they have engaged in trial activities or responded to competitive situations without seeking aid or addressing the issue of planning.

B
Digital Money Market Potential

1. Potential for Bank and Non Bank Institutions

This study has shown that the potential impact of digital revenue on banking measured in terms of incremental annual revenue will amount to $1 trillion by 2002. The percentage of worldwide banks using digital money products by that time will be over 98%. These products will also result in improved service and significant changes in the way banking is conducted.

2. Potential for IT Vendors or Service Providers

When examining the portion of IT revenues of service providers attributable to the development and use of digital money products by banks, many factors must be considered.

- A portion of the revenue that IT service providers obtain may be for consulting or business planning related to digital money.
- There may be project work on workstation stations for users and for changes in legacy systems that is partially attributable to digital money products, but is not recorded as such.
- Not all of the bank expenditures for tests or trial use of digital money products and services is recorded as related to digital money.
- Expenditures to develop and implement digital money products are generally not separated into hardware, communications, software and service components.

The potential market for software and services for IT vendors was approximated by obtaining estimates of the percentage of IT expenditures for software and services made by banks for development, implementation and enhancement of digital money products. These percentages were applied to projections that INPUT had made for expenditures in the banking vertical market, and the results were reviewed with selected vendors and banks and adjusted on the basis of their comments. The potential market figures which resulted are shown in Exhibit VII-5.

Exhibit VII-5

The Potential Digital Money Market for IT Software and Services

Geographic Market	Expenditures, 1997 ($M)	Expenditures, 2002 ($M)
North America (US and Canada)	3,600	28,600
Europe.	1,650	12,300
Total World, 5 Regions	5,100	47,100

Source: **INPUT**

The estimate includes assumptions about changes in the banking business by regions including an increase in financial services supplied by banks in North America.

C
Recommendations for Banks and IT Vendors

1. Recommendations for Banks

Recommendations for banks include steps to plan for the introduction of digital money. Many banks report they did not fully research marketing and product questions before launching products. A summary of recommendations relating to business issues is shown in Exhibit VII-6.

Exhibit VII-6

Recommendations for Banks Offering Digital Money Products/Services

Actions Recommended by Banks	Relative Importance of Issue to Banks, Worldwide
Develop Realistic Forecasts for Digital Money Products	4.2
Select Products Best Suited to Customer Needs	4.1
Develop Business and Product Plans for Digital Money	3.9
Research Security and Standards Issues	3.7
Develop Implementation/Support Plans	3.3

Source: **INPUT**

Banks must consider using IT service providers to help them with the planning indicated in the prior exhibit if they are not able to accomplish the planning activities indicated in the prior exhibit.

Steps that banks should consider to aid with planning for digital money products and services include:

- Work with other banks in a consortium or group activity such as Integrion.
- Use a service provider that can aid with planning, implementing and offering digital money products and services. Possible providers include bank groups like Integrion which offers services to non-member banks outsourcers, SI vendors and vendors of solutions.

Banks also must analyze their needs and evaluate potential providers as discussed in the study.

The first task that banks should consider before proceeding with plans for digital money projects and evaluation of IT service providers is research or review on products that are being offered, experience of these products in the market, and current plans for product improvement and use of new technology.

2. Recommendations for IT Service Providers

IT service providers should encourage prospects to engage in a review of the market and products that they are interested in.

IT vendors should also be prepared to provide business planning aid themselves. or know where prospects can obtain such aid. Providers should also make sure that banks have carried on sufficient planning on their markets and potential products to ensure that products are economically viable.

- Several vendors reported that they found banks had not chosen the products or features of most interest to their customers and/or had not priced the products competitively or planned adequate support services for them.

- If vendors do not review or investigate plans, they may find that projects or work that is planned will not be realized.

Service providers must also maintain knowledge of new digital money products/services and new development in technology that can enhance these products and services. Since these products can be used remotely, banks that develop home banking systems, for instance, can find that they are losing business to remote as well as local banks with more appealing home banking services. Banks who have used vendors to aid in implementing services are likely to be unsatisfied with vendors who help to implement systems that are not competitive.

Service providers report that they must have considerable knowledge of sectors of the digital money market that they serve as well as personnel with the skills in highest demand in support of those sectors of the market.

- Banks are more apt to seek vendor services to counter deficiencies in their internal IS staff.

- Banks are also seeking aid from vendors with experience in implementing digital money products. Vendors must be prepared to address these needs as well.

IT vendors also report that banks are interested in service providers who have products or components of products that can help to build a digital money offering. The products that have caused banks to be attracted to vendors include networks, specialized terminals, smart cards, personal financial services, technology to support letter of credit services and software products that support money transfer or use of the Internet.

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