

The Business and Information Technologies (BIT) Survey
Annual Report 2003-04

Atanu Ghosh
Harvinder Pal Mahey
Shilpa Madan

January 2005

The Business and Information Technologies (BIT) Research Project

Shailesh J Mehta School of Management
Indian Institute of Technology, Bombay

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Summary

The UCLA Business and Information Technologies (BIT) Survey is a baseline study aimed at understanding and tracking the impacts of technologies on business practices. This report presents the results of the first survey conducted in India in 2002-2003. The subject group of the survey consisted of organizations and sub-organizations that make independent decisions with respect to the acquisition, implementation and use of new technologies. The survey was undertaken by information system managers or Chief Information Officers of the various organizations or sub divisions. The survey comprises of a varied set of questions covering diverse business practices, technology adoption, transfer, outsourcing and its impact on the organizational structure.

The survey indicates that the Indian businesses are changing, requiring more effective solutions to deliver better value to the customers and maintain their position in a fiercely competitive scenario. Indian businesses during 2002-03 were definitely at an inflection point in terms of deployment of information and communication technologies, ready for a quantum leap in few years to come.

Few of the key results of the survey were as follows,

- The number of employees facing the screen is increasing across all sectors and the need for retraining to keep abreast with the latest technologies is being felt increasingly.
- The span of control is increasing with the organizations becoming flatter. The demand for executive decision making tools is increasing across all the sectors.
- ERP, Website, E-Commerce, Groupware and security tools form the most commonly deployed technologies by the Indian businesses. Also, third party authentication and verification, wireless networks, content management and collaboration tools have been identified for near term purchase.
- Security is becoming a major concern with all the organizations and the importance of disaster recovery and business continuity is being realized. Even with this trend, advanced techniques like Biometry still have to gain a strong hold in the Indian business sector.
- Radio Frequency Identification is also not widely adopted yet there is no significant inclination to purchase it in the near future also.
- Outsourcing is limited to market research in non IT and programming, network management etc. within IT. Functions like payroll and finance and accounting are largely being performed in house.
- Organization websites are largely being used as platforms to provide information, except for in the financial sector, where transaction processing services are also made available through the website.

Introduction

According to World Information Technology and Services Alliance (WITSA) biennial study, “Digital Planet: The Global Information Economy”, ICT spending is expected to grow faster than the global economy at approximately 8 per cent a year from 2003 through 2007. The data projects Asia to be a powerhouse of global growth in ICT spending by 2007. Asia will grow at a compound annual rate of 9.3 per cent from \$568.2 billion in 2003 to \$811.1 billion in 2007.

The domestic IT spending in India is at an inflexion point and there are numerous opportunities in the domestic sector, which can help catalyze growth in the next 2-3 years. India’s technology spending has zoomed from \$1.8 billion in 1993 to \$7.1 billion in 2001 - at a compounded annual growth rate (CAGR) of 18.7 per cent. (Nasscom 2004) The spending on information technology includes a country’s spending on hardware, software, software services and IT office equipment (like photocopiers and printers).

The key drivers for growth in the domestic market include¹:

- Opportunities in verticals such as Energy, BFSI, Manufacturing, Education, Telecom and Government
- Increased penetration of computers in the household and SOHO segments
- Increased investments in IT by the central and state governments in e-governance initiatives
- Rapid adoption of broadband
- Increased usage of non-PC devices especially cellphones
- Increased focus of Small and Medium sized software companies on domestic market

E-commerce activity during 2002 was estimated to be in the region of around US\$ 300 million, almost half that of China. B2B E-commerce implementation was low except in certain verticals such as the automobile sector and banking and finance.²

A recent survey by IDC on the Indian E-commerce transactions market showed that B2C E-commerce is expected to grow to Rs. 2,300 crore by the end of 2006 at a CAGR of 79 percent . These are the kind of changes happening in the Indian business with respect to deployment and usage of ICT.

The intent of the Business and Information Technologies (BIT) project is to study the impact of new information technologies on business and industry structure. The Internet phenomenon was primarily a matter of a fundamental change in information logistics, with the protocols of the web superimposed on a deregulating and increasingly competitive telecommunications environment.

The BIT study documents the information technology driven changes that are occurring in business structure, business practice and sector structures across a wide spectrum of industry sectors in the United States and the rest of the world. The first step in the process is to do a base line study that establishes the state of this universe. Subsequently, the study will be repeated at appropriate time intervals to track the changes that are actually occurring, so as to provide hard information on what is really happening across the economic landscape as a result of changes in information technologies. The study will encompass several sectors. The BIT project is being conducted at a global scale. At the time of writing, the project has nine partners in leading academic and research institutions around the world. The

¹ http://www.nasscom.org/download/indian_IT.pdf

² http://www.nasscom.org/artdisplay.asp?cat_id=321

partners include SDA Bocconi (Italy), SOM-IITB (India), Theseus Institute (France), The World Internet Institute (Sweden), EIM (Germany), IESE (Spain), PUC (Chile), Korea University (Korea), and CEIBS (China).

This report summarizes the results from the first BIT survey conducted in India in 2002-2003. The hypotheses and the results are discussed in the following sections. The organizations in the sample have been broadly categorized into three verticals namely, financial, manufacturing and service organizations. (For the sample profile, please refer Appendix B). While financial sector races ahead of the other two in deploying ICT, manufacturing and services both seem to be ready for the leap in the usage of ICT given the increasing pressure on margins and competition.

The methodology used has been described in the Appendix A.

The Survey

The first phase of the study involved designing the instrument comprising of the trends/patterns to be studied, followed by pre testing and determining the relevance, reliability and validity of the questionnaire keeping in mind the present Indian business context. The major issues in the questionnaire are as discussed below,

Technology Adoption/Infrastructure and Budget Trends

Question 1 & 2 – What technologies are organizations using currently or planning to use in the near future? What alternatives are being used for disaster recovery and continuity?

Question 3 – What technologies have organizations invested in (and not invested in) over the last 3 years?

Internal Organization

Question 4 – How are organizations changing internally in terms of their workforce?

Question 5 – How are organizations changing internally in terms of their structure?

Question 6 – Are organizations outsourcing some of their business processes? Is Business Process Outsourcing (BPO) more popular for certain functions in the organization such as accounting, marketing, IT and finance? What is the outsourcing budget for organizations for IT and non IT functions? How much of the total outsourced business is offshore?

Customer Facing Interactions

Question 7 – Are relationships with customers developed and maintained using multiple touch points? What are the most popular touch points?

Questions 8 & 12 – How is Customer View integrated using certain technologies? What mechanisms are used by organizations to perform customer segmentation?

Questions 9 & 10 – Are Promotion and Advertising budgets shifting towards online channels? Which online advertising methods have been adopted by organizations? In going online, are organizations creating a new face in terms of branding concept, slogan, logo and name?

Question 11 – For which functions is Customer Relationship Management (CRM) becoming automated?

Questions 13 – Is the number of organizations selling products and services online increasing? How is online business different from traditional business?

Trading Partner Relationships

Question 14 – What technologies are organizations using for communicating with their trading partners?

Question 15 – What IT-based channels and B2B mechanisms are organizations using for purchasing?

Business Results

Questions 16 & 17 – What Economic and Operational business results are being impacted by technologies? What Strategic areas are being impacted by information technologies?

Globalization

Questions 18 & 19 – Are organizations becoming more global? Is the geographic reach of organizations increasing?

Findings

The survey was sent to senior IT managers or chief information officers in the various organizations and sub divisions. About 75 responses from various industry sectors were received. Details of the sample have been discussed in Appendix B. Results obtained by analyzing these responses are as given below,

Technology Adoption/Infrastructure and Budget Trends

- ERP, Website, E-Commerce, Security tools, Groupware form the most used technologies across all business sectors. However, there is a greater thrust on third party authentication and verification and surveillance systems by the financial institutions.
- Wireless Networks, collaboration tools, content management and E-Learning are being considered for near term purchase.
- The spending on storage hardware, security software and hardware and infrastructure has increased across all the business sectors. Budgets for operating systems/networking, off shore outsourcing have not increased substantially.

Internal Organization: Workforce trends

- The number of employees facing the screen has increased and is expected to rise further across all the three business sectors.
- Teleconferencing is increasingly becoming most popular in financial services sector but manufacturing and services are also ready to catch up. Automation is definitely taking its toll on the employee count, but only financial services and manufacturing organizations predominantly think that outsourcing is leading to a reduction in headcount.
- There is an overwhelming agreement in all the sectors that need for IT skills in lower levels of the organization is going up. There is a consensus in the financial services sector that all workers need to retrain themselves to keep up to changing technology, services follows closely in sharing this thought.

Internal Organization: Structure Trends

- There is a clear trend that the organizational structure of Indian organizations is changing. The span of control under each manager increasing and organizations are becoming flatter.
- The organizations are becoming increasingly more conscious about monitoring of customer facing interactions and are also using automated monitoring of productivity.
- Organizations across the sectors are becoming geographically dispersed and decision making and other tools are becoming available online.

Internal Organization: Business Process Outsourcing

- Increasing trend of outsourcing the network management function across the sectors, payroll processing still being done house in approx 60% of the organizations studied.

- Most of the organizations plan to outsource market research, in part or in whole; in the near future however, accounting, finance, order fulfillment, RFPs, bids and contract management are typically performed in house and are indicated to remain so over the next few years.

Customer Touch Points

- Use of several channels to be in touch with the customers is on a rise, with organizations across all sectors widely deploying face to face contact, regular mail, e-mail and phone. While financial services organizations have started providing phone text messaging and IVR, very few manufacturing or service organizations do so.

Customer View Integration and Customer Segmentation

- Customer profiling, trend identification and statistical data mining are the most popular tools for customer view integration.
- Dynamic pricing and geographic segmentation form the most widely adopted customer segmentation strategies across the manufacturing and service sectors.

Online Advertising and Selling

- Web banners, advertisements or Links on other websites to drive traffic to the company website, advertisements or Links on search engines to drive traffic to the company website are the most popular online advertising methods across all sectors.
- Less than one fifth of the organizations have changed their identities in terms of logo (17.6%) or name (12.2%) when going online.

Customer Relationship Management (CRM) function automation

- Order tracking and fulfillment, order placement and help desk support from the CRM functions automated most often, while sales calls and marketing are the least automated CRM functions.

Traditional versus Online Selling

- The data collected and self service tasks performed by customers are higher for online selling while sales volumes, cost of products and the number of products offered are higher in traditional selling.

Trading Partners Relationships

- Web enabled communication and –procurement are the most widely used methods of communicating with the trading partners. E-payment and collaborative forecasting and planning are the technologies that many organizations wish to adopt in the near future.

Purchasing Mechanisms

- Direct Purchasing, Long-term Purchasing and Catalogues are the most used B2B mechanisms used for purchasing. Exchanges/E-exchanges, Buy-side

Exchanges/Hubs, Sell-side Exchanges/Hubs and aggregators are the least used purchasing mechanisms.

Business Results

- Production costs, commercial costs, internal communication costs and service costs have decreased with technology adoption while technology costs have increased.
- Technology has also played a role in strategic areas including the understanding of customer satisfaction for current products and services, competitor knowledge and customer buying behavior.

Globalization

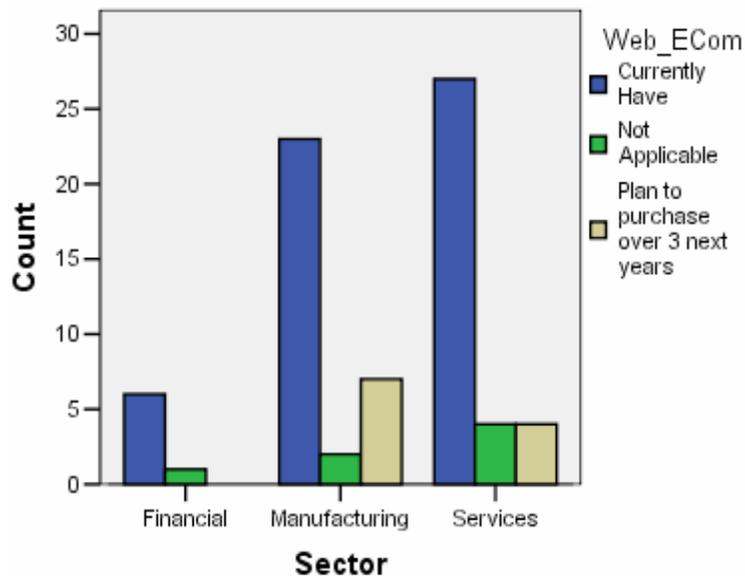
- Over half the organizations surveyed are increasing production/services bases in other countries, trade in other countries and distributors/branches around the world. Over a third reported an increase in the number of countries in the supplier base.
- Organizations are planning to increase base in USA, Central and Eastern Europe and Canada and Mexico. Most established bases include USA, South Asia, Western Europe and Middle East.

Technology Adoption/Infrastructure and Budget Trends

Question 1& 2 – What technologies are organizations using currently or planning to use in the near future? What alternatives are being used for disaster recovery and business continuity?

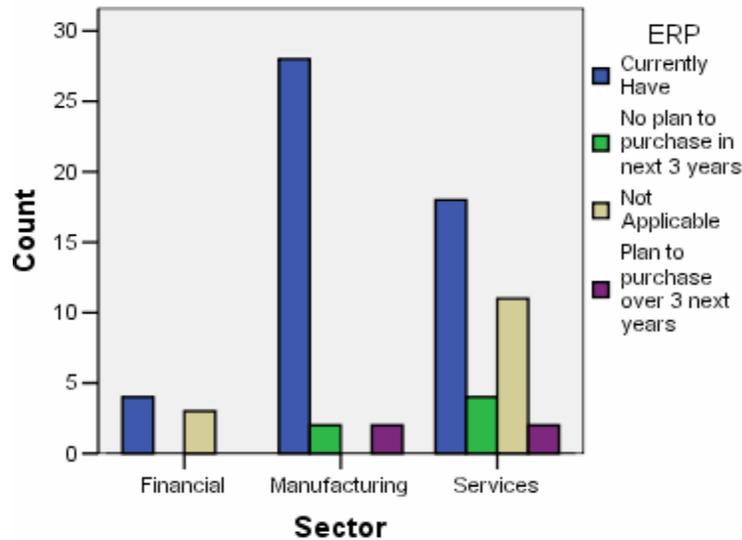
90.6% of the organizations across all business sectors either have or plan to have websites and e-commerce tools within the time span of next three years. 73% of the organizations already operate an ERP solution or are planning for one, 70.2% have/plan to have Business Intelligence Tools, 78.3% have/plan to invest in collaboration tools in the near future, 66.2% either have an Enterprise wide Instant Messaging system or are planning to have one.

Figure 1.0 - Website and E-Commerce Adoption



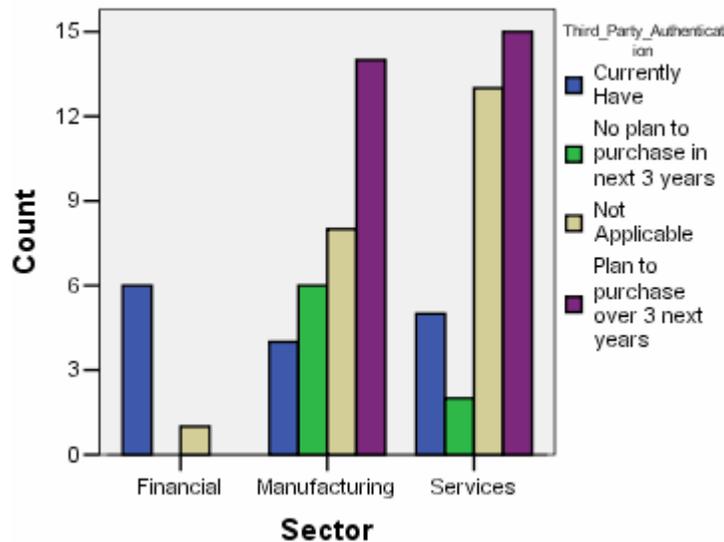
Biometry has largely been adopted by the financial sector (57.1%) vis-à-vis manufacturing (12.5%) or services (8.6%). The same holds good for Third Party Authentication and Verification with 85.7% of the financial sector organizations being certified vis-à-vis manufacturing (12.5%) and services (14.3%). On the other hand, ERP dominates in the manufacturing sector (85.7%) as compared to financial sector (57.1%) or services (51.4%).

Figure 1.1 – ERP Adoption



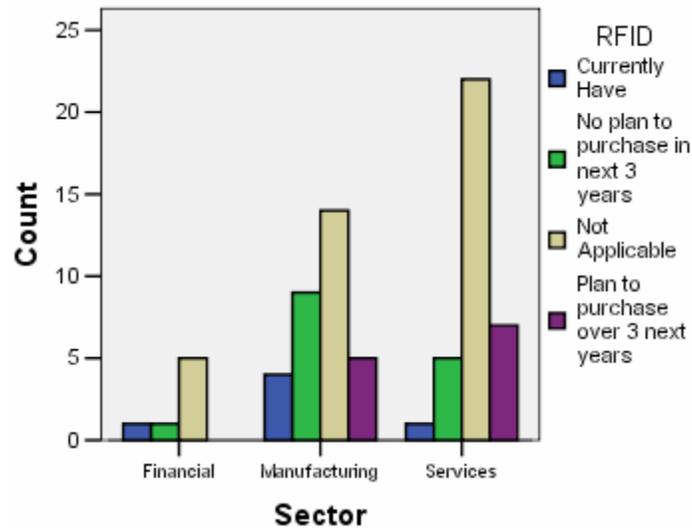
Among these technologies, Third Party Authentication and Verification (39.2%) and Enterprise Application Integration (33.8%) are the two most popular technologies on company budgets and slated for adoption in the next 3 years, followed by Storage Area Networks (32.4%) and Business Process Mapping (31.1%)

Figure 1.2 – Third Party Authentication and Verification Adoption



Technologies that fewer organizations plan to purchase in the next 3 years include ERP (5.4% have/plan to have while 8.1% of the organizations do not plan to have) and Biometry (10.8% have/plan to have while 21.6% do not plan to have).

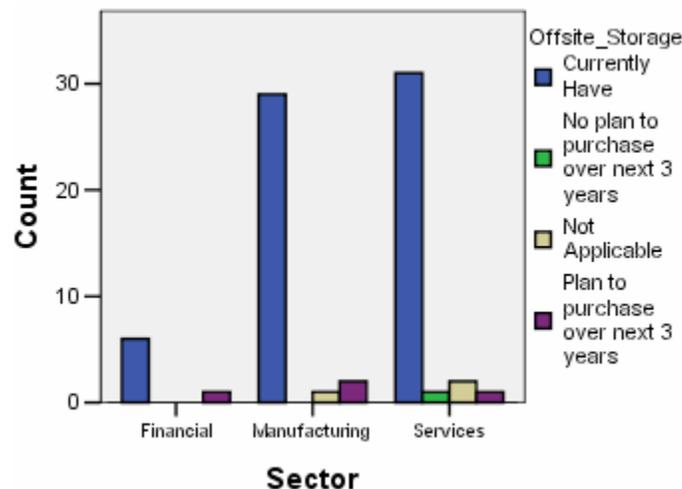
Figure 1.3 – RFID Adoption



Radio Frequency Identification (RFID) is currently adopted only by a very small percentage of organizations (8.1%). However, 23% organizations plan to purchase the technology in the next 3 years. Also, Linux is currently being used by 39.2% of the organizations with almost 23.0% planning to buy in the next 3 years.

An overwhelming 89.2% of the organizations use off site data storage for disaster recovery and business continuity, followed by mirroring (33.8%). About a quarter of the organizations surveyed planned to acquire cold sites (23.0%) and mirroring (23.0%) in the near term future.

Figure 1.4 – Offsite Storage Adoption



Question 3 – What technologies have organizations invested in (and not invested in) over the last 3 years?

An overwhelming 70% of all the organizations surveyed indicating an increase in security spend since last year. Enhancing hardware security is a priority with almost 66 % of the organizations; however improving application security is more important at 81%. Here also, we see a greater emphasis on security issues by the financial service providers (87.5%) vis-a-vis Manufacturing (57%) and services (67%).

Figure 2.0 – Hardware Security Budget Trend

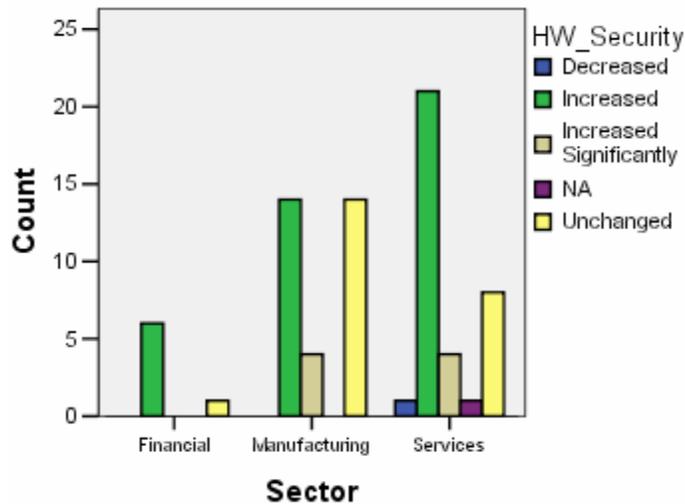
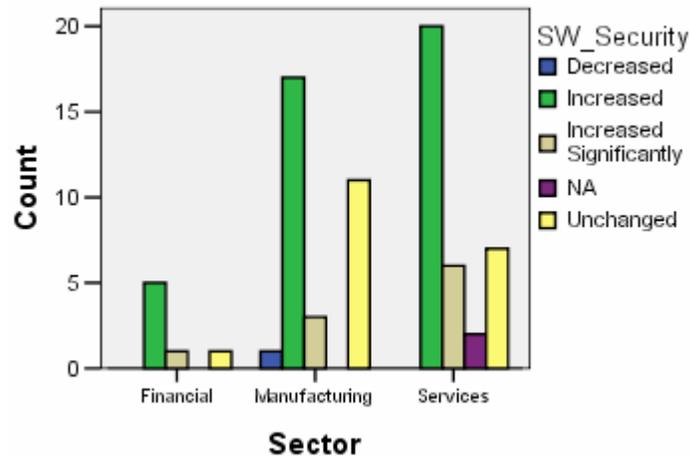


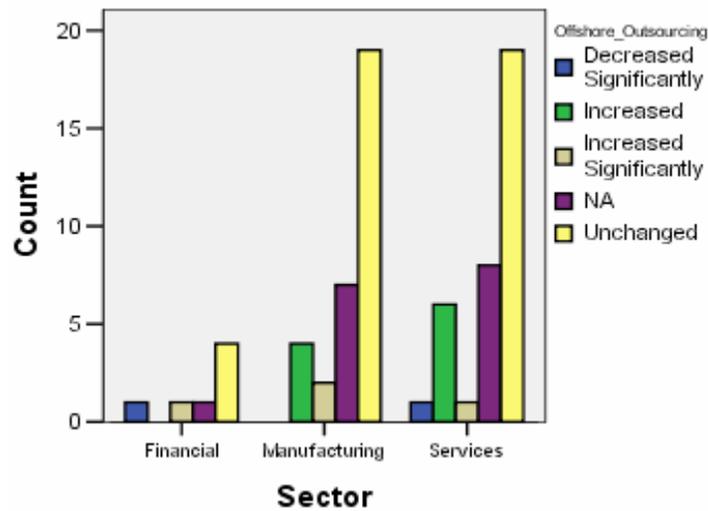
Figure 2.1 – Software Security Budget Trend



Disaster Recovery and Business Continuity planning have become part of the board room agenda at least for the Financial Services Sector with over 88% of the respondents indicating an increase in expenditure in the next 3 years. Offshore outsourcing still does not seem to be a lucrative option for Indian companies with only about 19% indicating an increase in their outsourcing expenditure. Although only 12.5 % of the

corporates in the financial services claim to have considerably increased spend on outsourcing, around 19% of the organization in the manufacturing sector claim increased expenditure in the last year.

Figure 2.2 – Offshore Outsourcing Budget Trends



Internal Organization

Question 4 – How are organizations changing internally in terms of their workforce and the workplace?

The number of employees facing the screen is increasing not only in the proverbial financial (62.5%) and services (85.3%) sector, but manufacturing (93.9%) also. As the organizations get geographically dispersed, the need for measures like teleconferencing and telecommuting is on the rise.

Figure 3.0 – Proportion of Employees facing a Screen

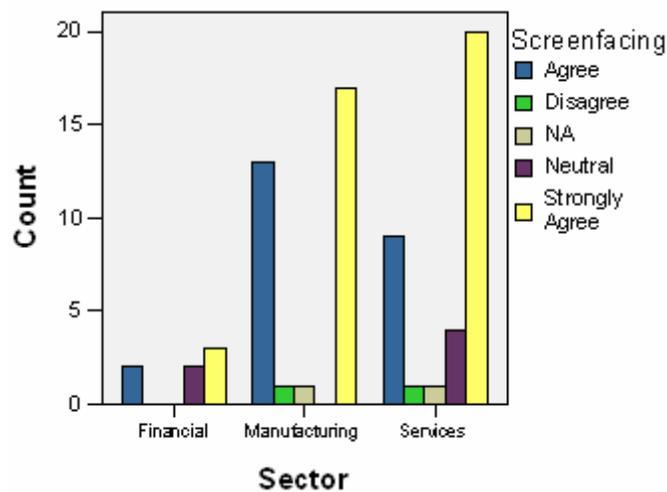
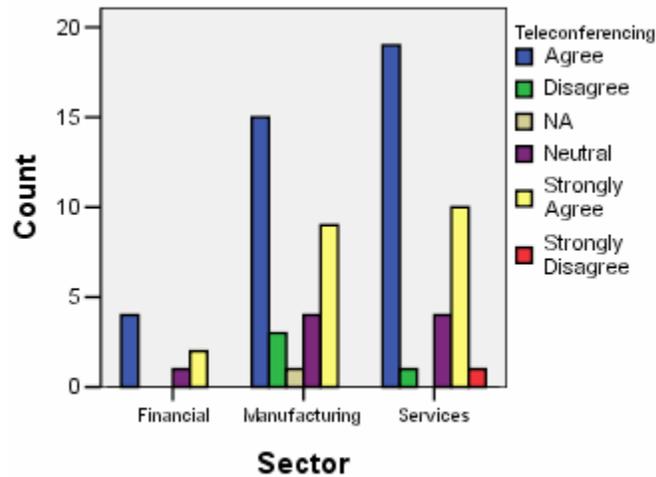
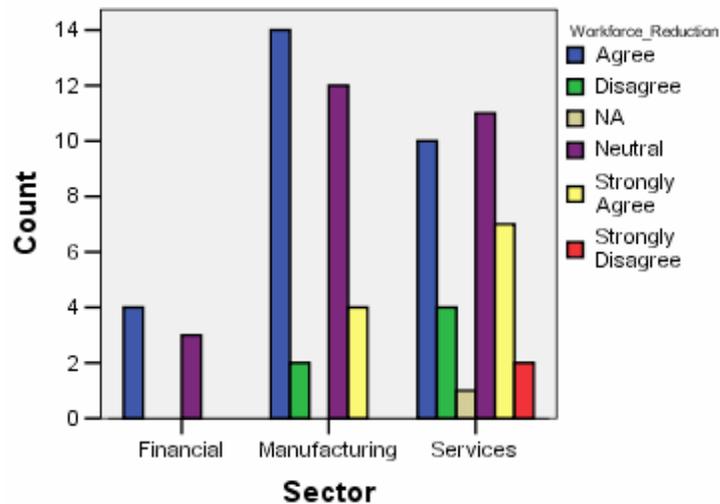


Figure 3.1 – Use of Teleconferencing



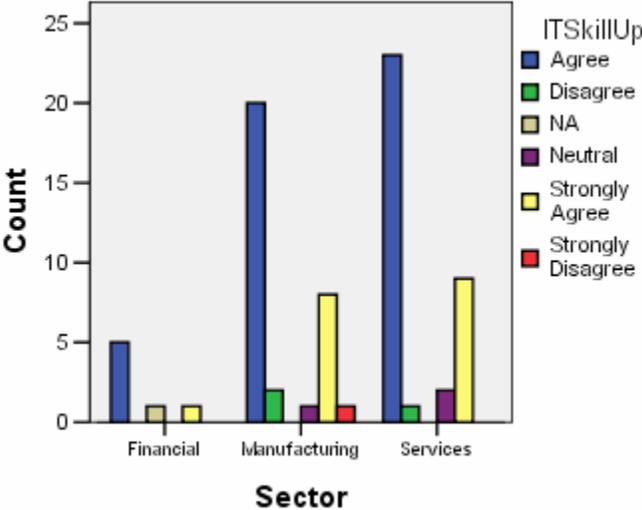
Use of collaboration tools between the employees like NetMeeting is also increasing. Demand for decision support tools for the executives is increasing. While there is a general consensus that automation is leading to workforce reduction, 62.5% of the financial organizations feel that outsourcing is leading to workforce reduction, vis-a-vis manufacturing (51.2%) and services (44.1%). This however, has not lead to a reduction in the number of middle managers with only 12.5% organizations in the financial sector, 33.3% in manufacturing and 26.5% agreeing to this phenomenon.

Figure 3.2 – Trend in Workforce Reduction



An overwhelming 90% of the organizations surveyed agree that the need for IT skills at lower levels is going up and retraining is essential to keep pace with the changing trends.

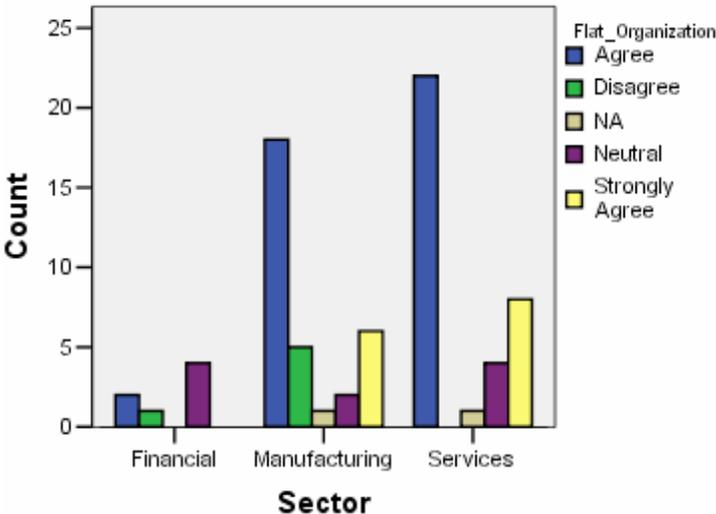
Figure 3.3 – Need for IT skills at lower levels



Question 5 – How are organizations changing internally in terms of their structure?

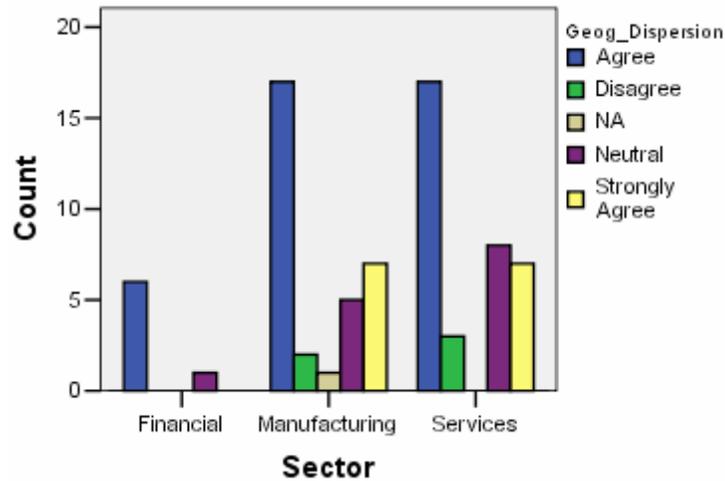
While 56% of all the organizations surveyed support that organizations are becoming flatter, only 25% from the financial services agree to this while the proportion for manufacturing(72.7%) and services(88.2%) is much higher. The span of control of the managers is on the rise with 61.4% of the organizations agreeing to this.

Figure 4.0 – Organization Structure Trends



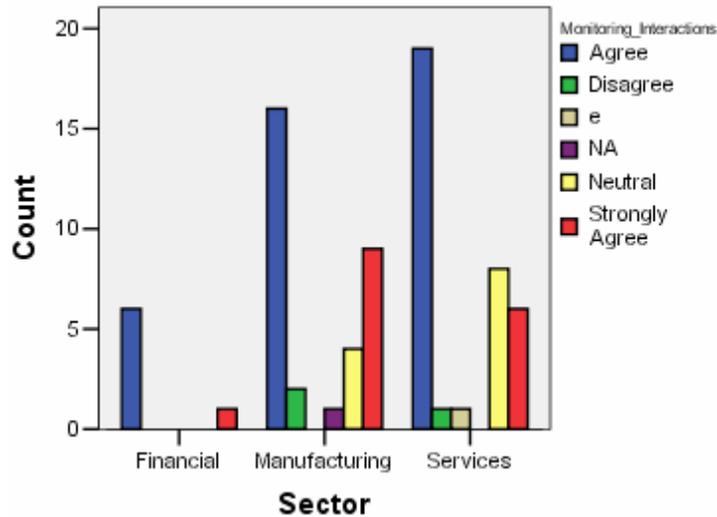
Geographically dispersed organizations are becoming common across all the three sectors (financial services -87.5%, manufacturing -75.7% and services-67.7%).

Figure 4.1 – Geographical Dispersion Trends



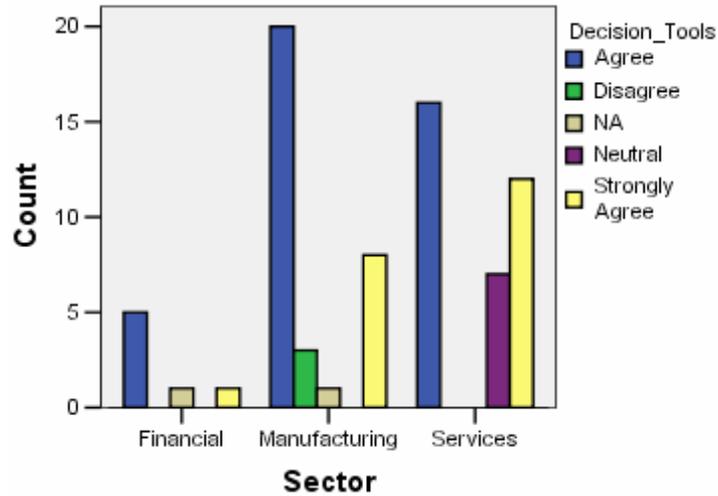
Monitoring of customer facing interactions is on the rise across all the three sectors (77.0%), while automated monitoring of productivity is most common in the services sector. Over half the organizations surveyed agree (70.3%) that incentives are based on productivity.

Figure 4.2 – Trends in monitoring customer facing interactions



Another significant trend observed across the board is the availability of new decision making tools and technologies being made available online as reported by 84% of the organizations.

Figure 4.3 – Trends in availability of Decision Making Tools



Question 6 – Are organizations outsourcing some of their business processes? Is Business Process Outsourcing (BPO) more popular for certain functions in the organization such as accounting, marketing, IT and finance?

Mundane activities like payroll processing are still being done in house in almost 58% of the organizations across all sectors. However, 10% of the manufacturing organizations and 15% service organizations are looking forward to outsourcing this in the near future. Accounting and Finance do not form part of the portfolio of the activities being outsourced with 77% and 68% of the organizations surveyed performing it in house and not planning to outsource over a three year horizon.

Figure 5.0 – Payroll outsourcing trends

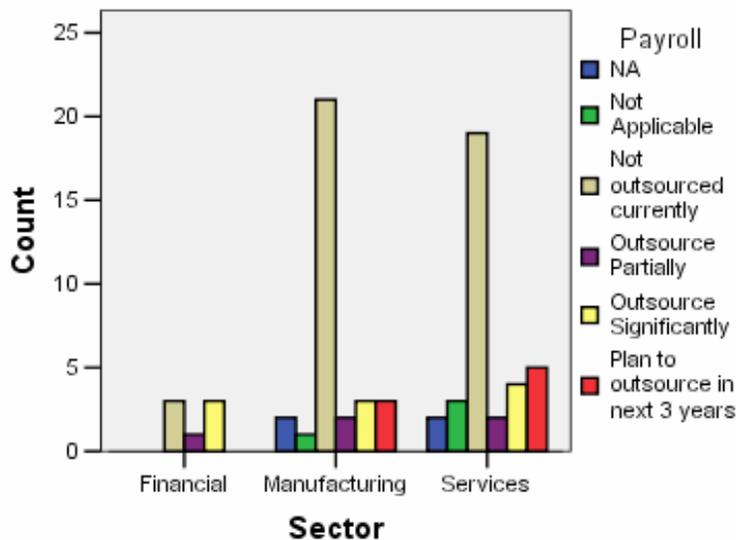
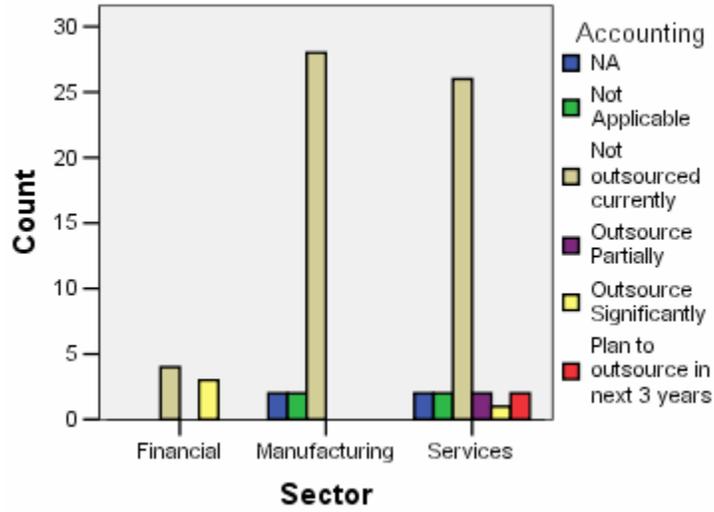
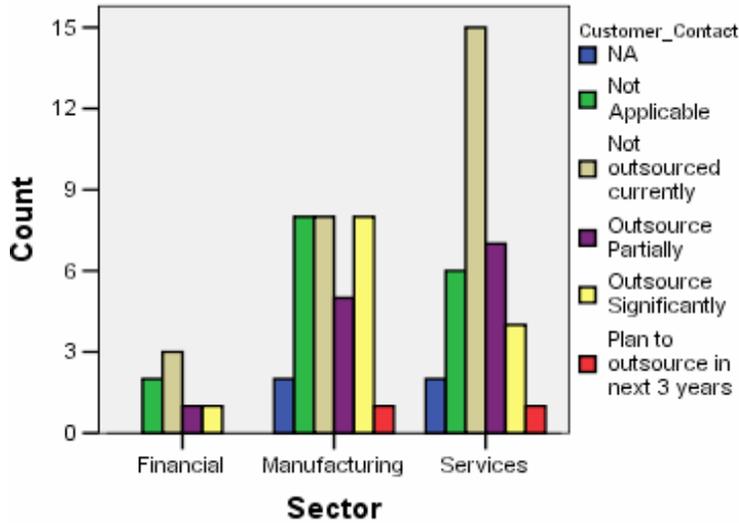


Figure 5.1 – Accounting outsourcing trends



While 88% of the financial sector organizations outsource programming jobs, only 59% of the manufacturing and 35% of the service sector do so. The results indicate that over 60% of the organizations in the service sector do not outsource network operations and have no plans of doing so in the near future. However, voice based customer service/ call center outsourcing is being utilized by 37.5% of the banks, 40% of the manufacturing enterprises and 35% of the service organizations interviewed.

Figure 5.2 – Trends in Customer Contact Outsourcing



Customer Facing Interactions

Question 7 – Are relationships with customers developed and maintained using multiple touch points? What are the most popular touch points?

Several touch points are being used by organizations across all sectors to keep in touch with their customers across all sectors, including face-to-face (93.3%), regular mail (84.0%), e-mail (94.7%), and phone (92.0%). Financial sector has pioneered in the use of phone text messaging (37.5%), interactive voice response (50.0%) and computer telephony integration (37.5%) to serve its customers, and the penetration is increasing.

Figure 6.0 – Usage of Face to Face Contact

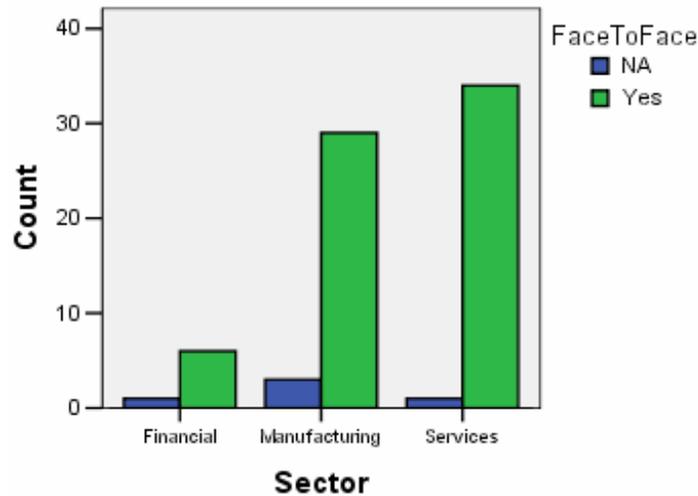
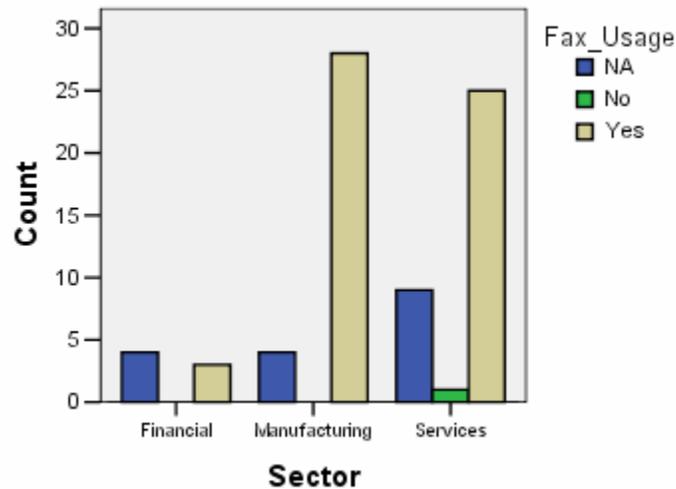
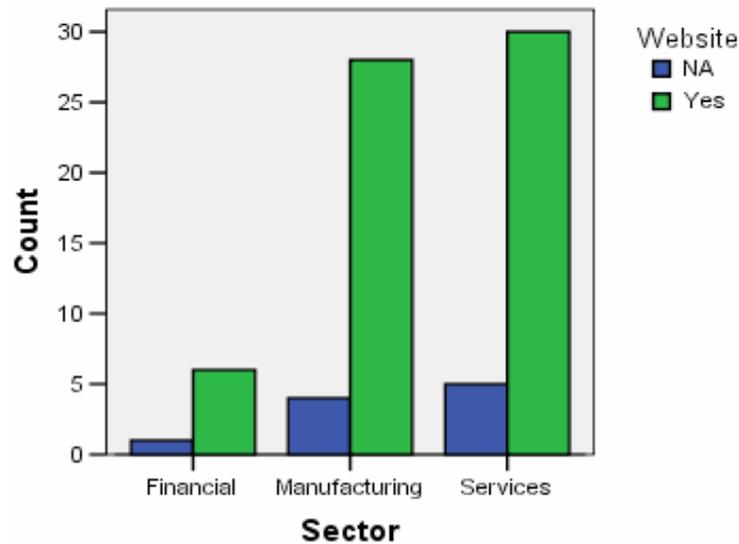


Figure 6.1 – Usage of fax for customer contact



A significant number of organizations (85.3%) across all the sectors use their website as a tool to provide information to the customer, while the organizations in the financial sectors have also started providing transactional services through their websites. Screen pops (9.3%) are the least used method of keeping in touch with the customer.

Figure 6.2 – Use of web sites for customer contact



Questions 8 & 12 – How is Customer View integrated using certain technologies? What mechanisms are used by organizations to perform customer segmentation?

Across sectors, customer data analysis is more heavily used by financial and services sectors including customer profiling (75.0% and 73.5% respectively, vis-à-vis 45.5% in manufacturing), data mining using statistics (37.5% and 47.1% vis-à-vis 27.3% in manufacturing).

Figure 7.0 – Trends in Customer Profiling

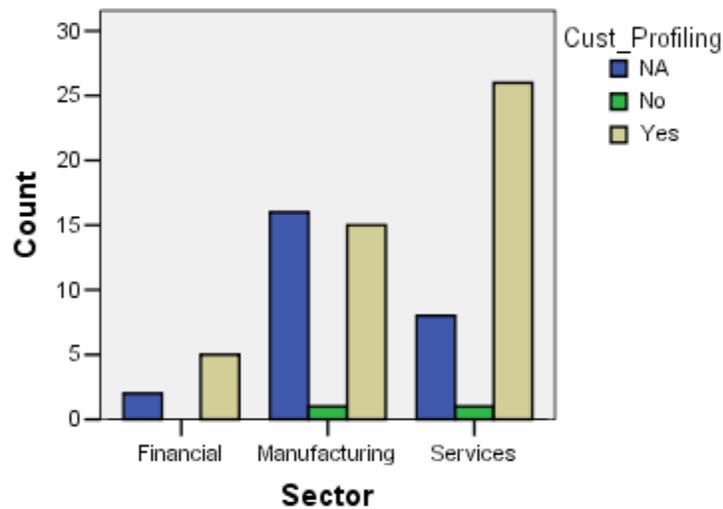
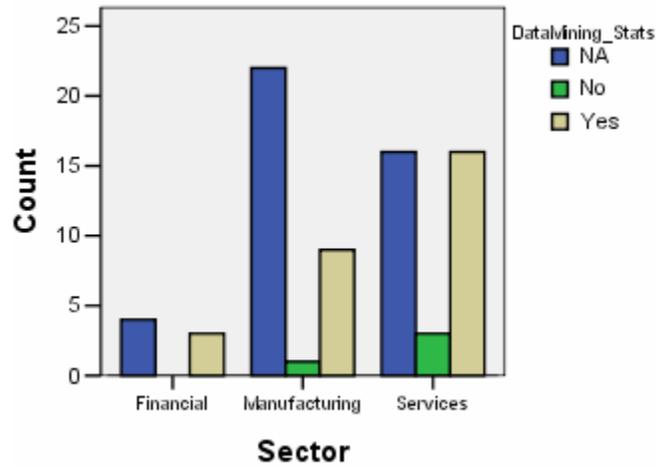
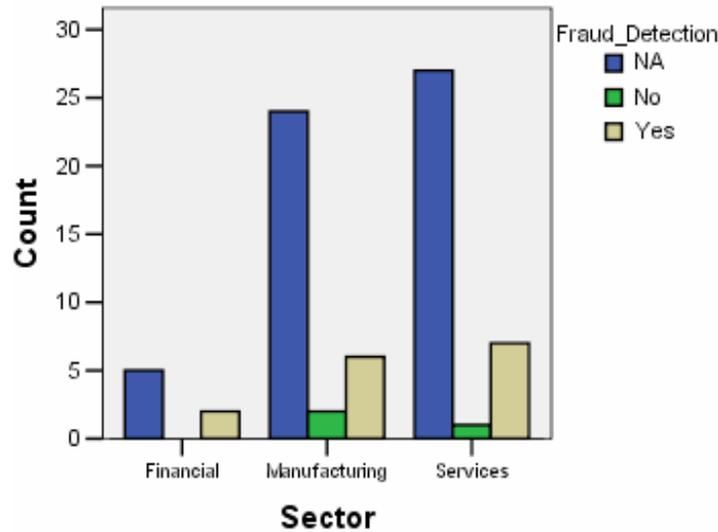


Figure 7.1 – Trends in Data Mining: Statistics



Techniques like neural networks for customer segmentation are yet to make their presence felt with only 2.7% of the organizations using it. Fraud detection is a priority with financial sector at 37.5% while about 18% of the manufacturing and service organizations use the same.

Figure 7.2 – Trends in Fraud Detection

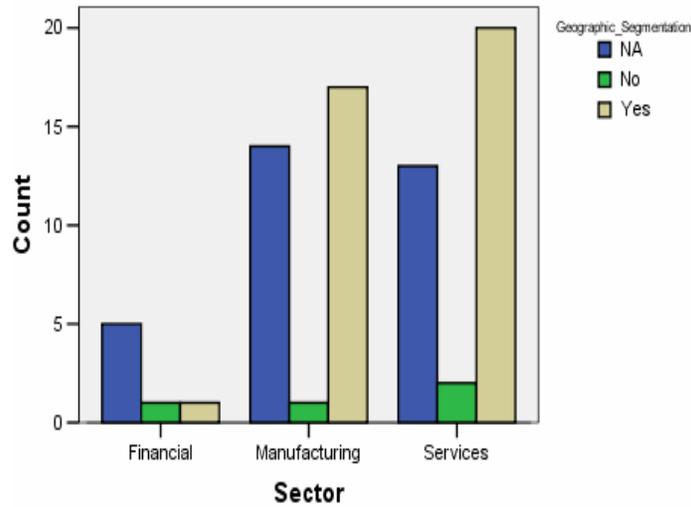


Demand forecasting is largely used by the manufacturing sector (57.6%) while the count for financial sector and services sector stands at 12.5 and 38.2%, respectively.

While automated cross selling is the most widely used mechanism in the financial sector (42.9%), dynamic pricing and geographic segmentation are popular in the services and manufacturing sectors at (45.7%, 43.8% and 57.1%, 53.1%, respectively)

Overall, the least used methods for customer segmentation include automated cross selling (10.8%) and by access to online technology (14.9%).

Figure 7.3 – Trends in Geographic Segmentation



Questions 9 & 10 – Are Promotion and Advertising budgets shifting towards online channels? Which online advertising methods have been adopted by organizations? In going online, are organizations creating a new face in terms of branding concept, slogan, logo and name?

Certain technologies for online advertising like web seminar, pop up windows, e-zines are being used almost exclusively by the services sector. Web banners are used most heavily by the financial sector (50.0%), compared to manufacturing (27.3%) and services (35.3%), respectively.

Figure 8.0 – Trends in use of Web Banners

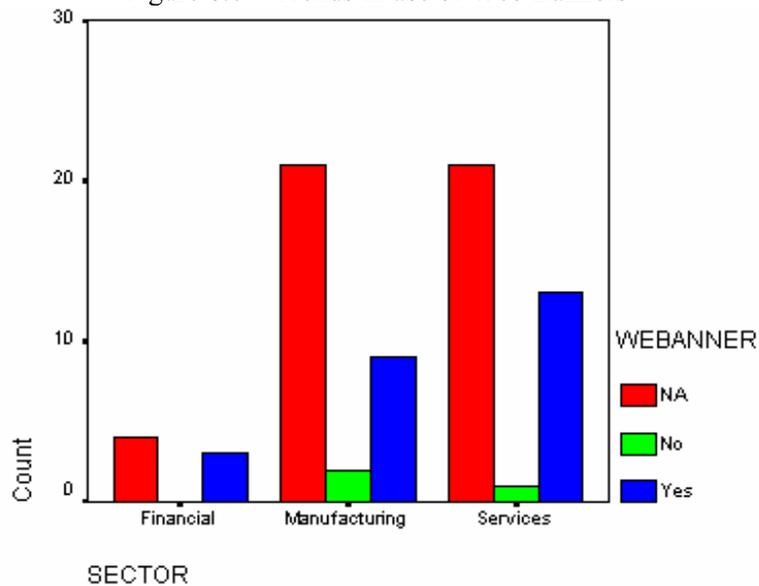
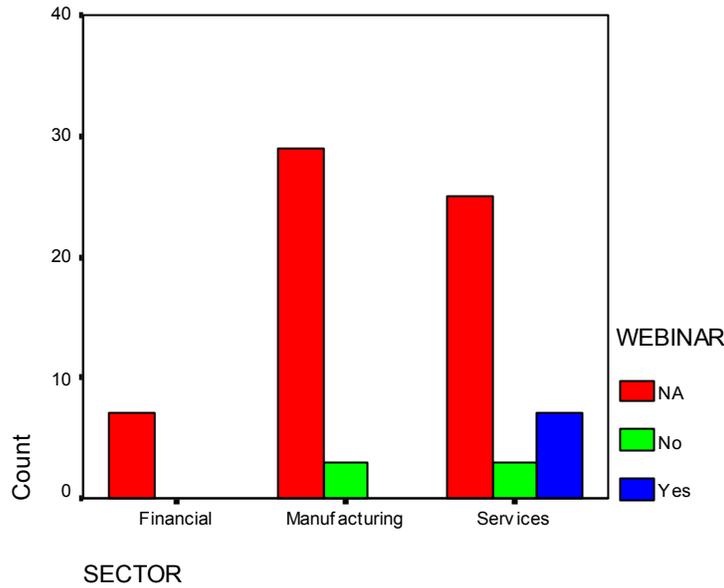
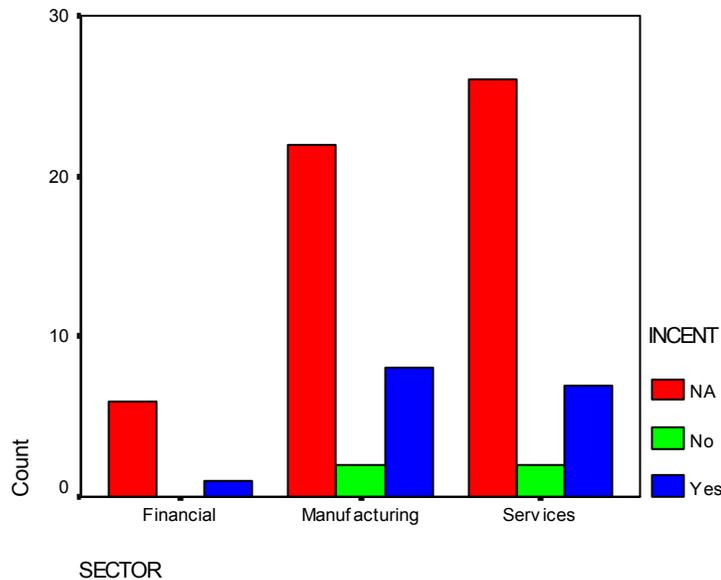


Figure 8.1 – Trends in use of Web Seminars



50% of the organizations surveyed in the financial and services sector use advertisements or links on other sites to drive traffic to their site, while only 18.2% of the manufacturing organizations surveyed, do so. Around 24.0% of the organizations in the manufacturing sector use incentives in printed material to drive customers to their website, as compared to finance (12.5%) and services (20.6%)

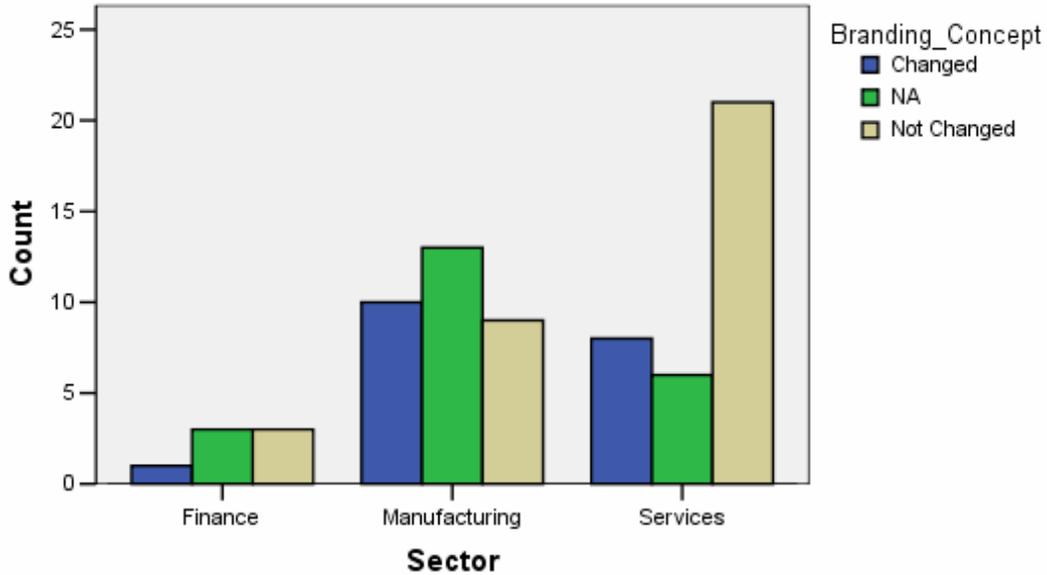
Figure 8.2 – Use of incentives to drive traffic to website



The survey instrument also contained a question on online advertising budgets. However, due to the few responses that were obtained for this question, data has not been reported here.

Among the organizations that currently have websites, only a few have changed their identity while going online in terms of logo, slogan, name or the branding concept. Among these, the branding concept (25.7%) and the slogan (23.0%) have been changed most often while the name (12.2%) has been changed least.

Figure 8.3 – Changing Branding Concept for Online

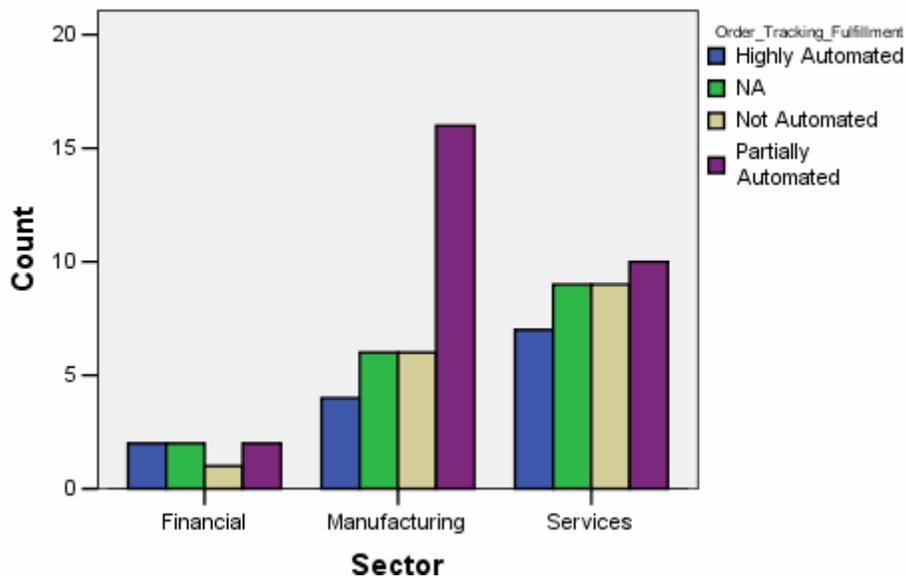


Among the sectors, the manufacturing sector organizations have changed their slogan, branding concept and name most often.

Question 11 – For which functions is Customer Relationship Management (CRM) becoming automated?

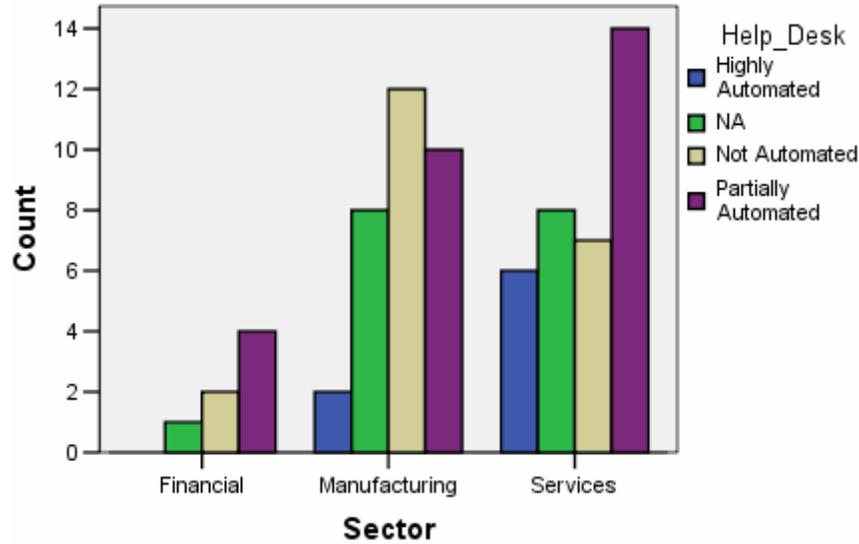
Order Tracking and fulfillment is most automated CRM function at 55.4%. Other automated CRM functions include, customer complaint management (50%), help desk management (48.6%), integration with ERP and SCM (45.9%), content management (41.9%), order placement (48.7%), CRM functions that have been automated the least include sales calls automation (28.4%).

Figure 9.0 – Trends in Automation of Order Tracking and Fulfillment



57.0% of the financial and service sector organizations have automated (fully/partially) their help desk functions as compared to manufacturing (37.6%). Further, maximum integration with ERP and SCM solutions has been achieved by manufacturing organizations (59.4%) vis-à-vis financial sector (42.9%) and service sector organizations (34.3%).

Figure 9.1 – Trends in Help Desk Automation

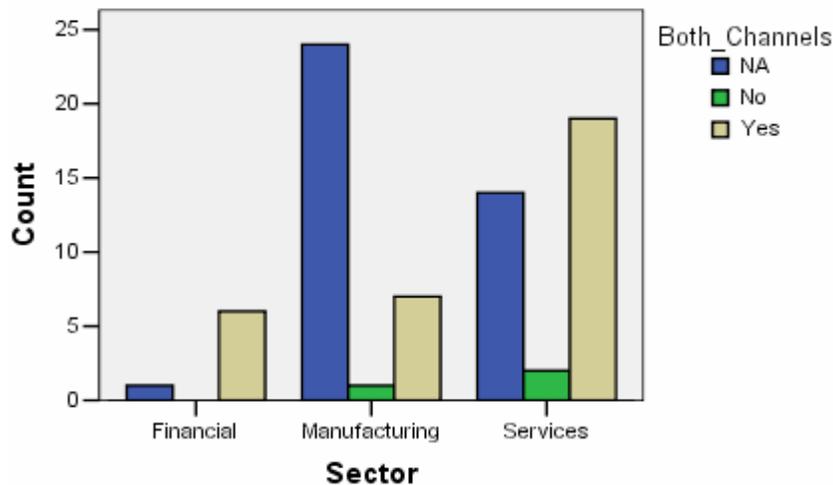


The marketing function is most highly automated in the service sector organizations (48.6%), followed by the financial sector (43.2%) and manufacturing (25.0%)

Questions 13 – Is the number of organizations selling products and services online increasing? How is online business different from traditional business?

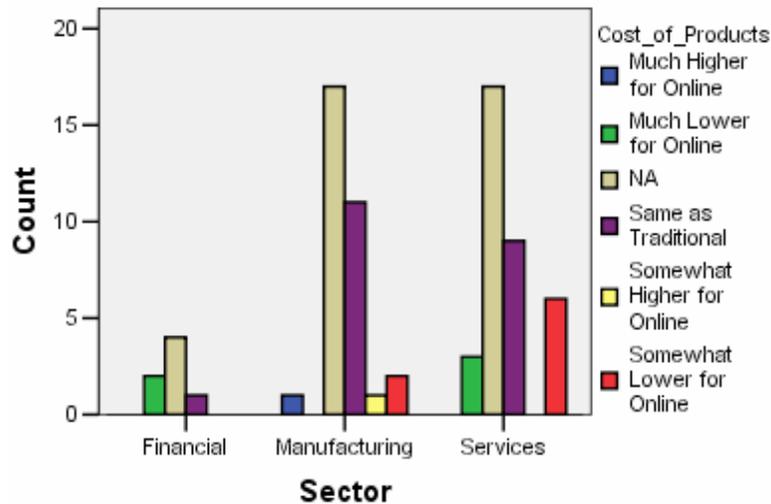
Less than half (43.2%) organizations use traditional as well as online channels to offer their products and services, while 54.1% use only traditional stores. Almost 86% of the financial sector organizations use both channels as compared to manufacturing (21.9%) and services (54.3%).

Figure 10.0 – Usage of Online and Traditional Channels



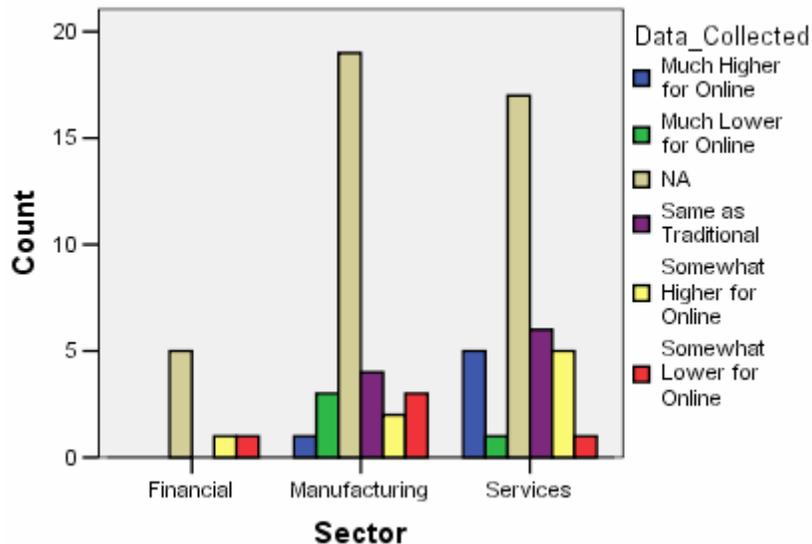
Online business was found to be different from traditional business in terms of cost of products, pricing, operating margins, revenue, data collected and customers performing self service tasks. The somewhat lower and significantly lower responses have been combined in the category lower and similarly for higher.

Figure 10.1 – Costs of Products for Online and Traditional Channels



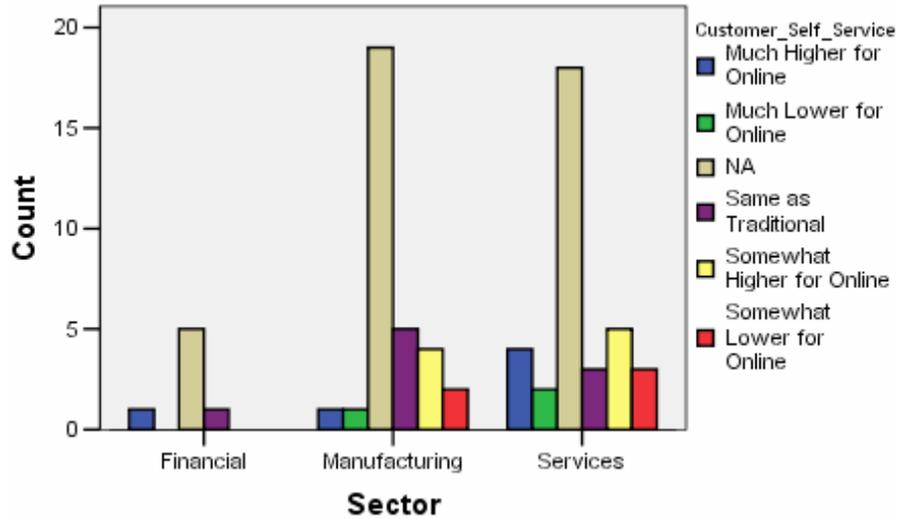
Cost of Products is lower for online for about one-fifth (17.6%) of the organizations, pricing is lower for almost 10% of the organizations while the sales volumes are lower for almost 16.2% organizations. Data Collected and the number of Self Service tasks performed by customers are higher for online for 18.9%% and 20.3% of the organizations respectively.

Figure 10.2 – Trends in Data Collection for Online and Traditional Channels



Further, customer self service and operating margins were found to be highest in the services sector (25.3%) compared to financial sector (14.3%) and manufacturing (15.6%). Again, data collected was highest for services (28.6%) vis-à-vis financial sector (14.3%) and manufacturing (9.4%).

Figure 10.3 – Trends in Customer Self Service for Online and Traditional Channels

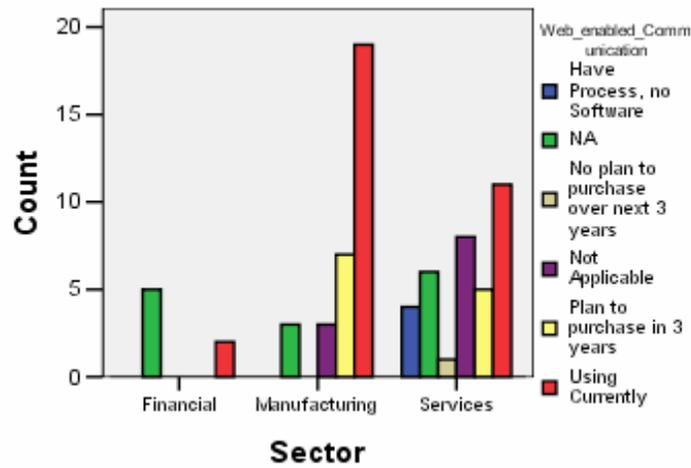


Trading Partner Relationships

Question 14 – What technologies are organizations using for communicating with their trading partners?

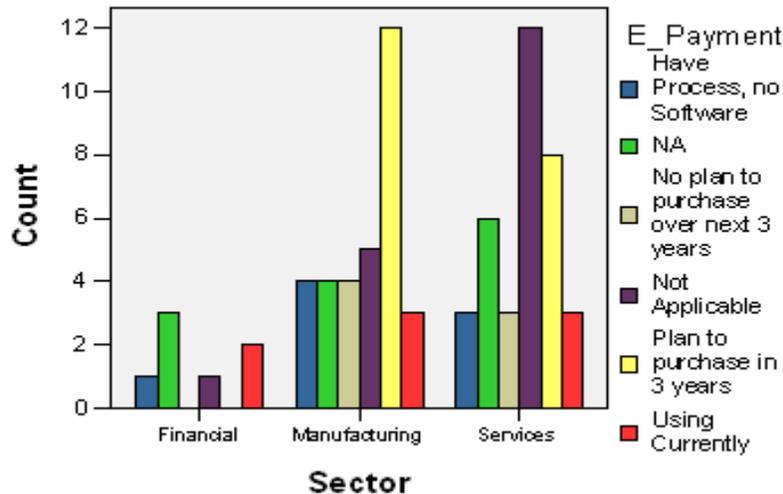
Web enabled communication (59.4% either have or plan to have in the next 3 years) and E-procurement (44.6% either have or plan to have) are the most popular technologies or communicating with the trading partners.

Figure 11.0 – Trends in usage of web enabled communication



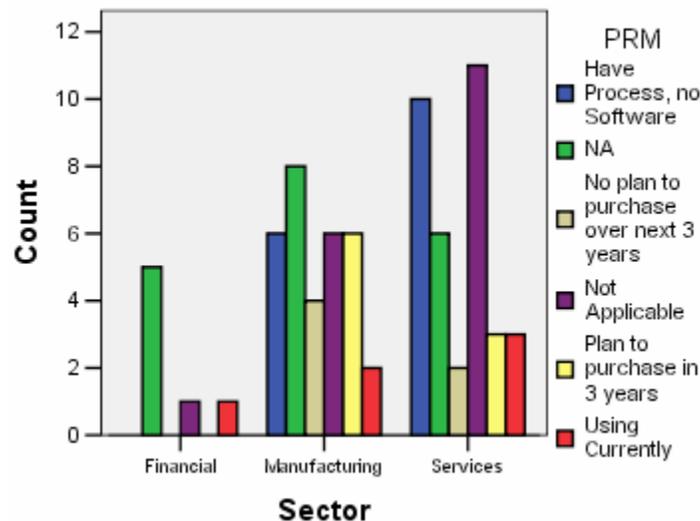
More than a quarter of the organizations (27.0%) plan to purchase an e-payment solution in the near future, followed by collaborative forecasting (23.0%) and collaborative planning (23.0%).

Figure 11.1 – Trends in usage of E-Payment



Over a fifth of the organizations have the process for Partner Relationship Management (21.6%) and 12.2% intend to buy the product in the next 3 years. Only 2.7% of the organizations currently use E-Compliance and around 13.5% do not intend to include it in short term purchase.

Figure 11.2 – Trends in usage of Partner Relationship Management

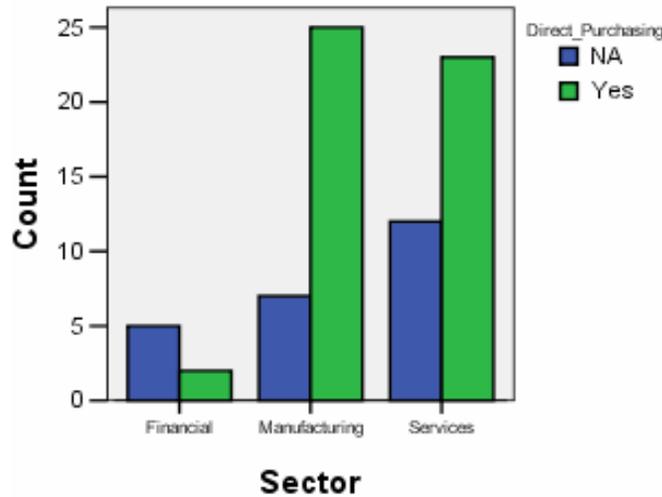


XML based communication is most widely used in the financial sector while EDI and Web enabled communication find most application in the manufacturing sector organizations. Almost one third organizations in the manufacturing sector (31.3%) use demand planning and replenishment vis-à-vis financial (14.3%) and services (16.2%). E-Payment is included in short term budget of almost 37.5% manufacturing organizations and 22.9% service sector organizations.

Question 15 – What IT-based channels and B2B mechanisms are organizations using for purchasing?

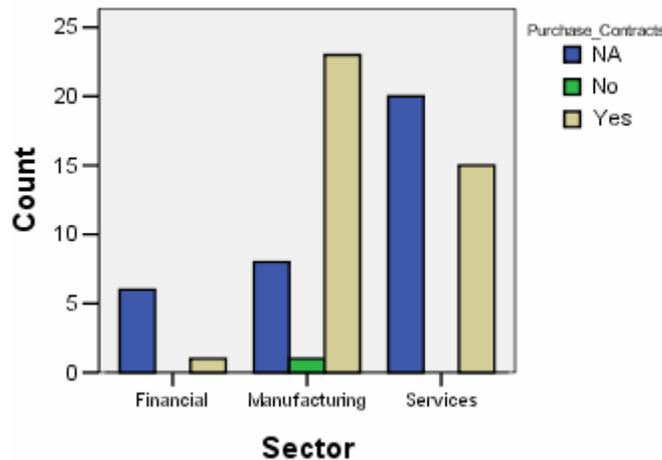
Direct purchasing (67.6%), long term purchasing contracts (52.7%) and catalogues (36.5%) are the most used B2B mechanisms for purchasing, followed by flexible, short term contracting (35.1%). Sell side hubs (4.1%), e-exchanges (5.4%), aggregators (8.1%) and buy side hubs (9.5%) are respectively, the least used mechanisms.

Figure 12.0 – Trends in use of Direct Purchasing



Almost all the B2B mechanisms used for purchasing are most dominant in the manufacturing sector organizations in comparison with the financial and service sectors, respectively.

Figure 12.1 – Trends in use of Purchase Contracts

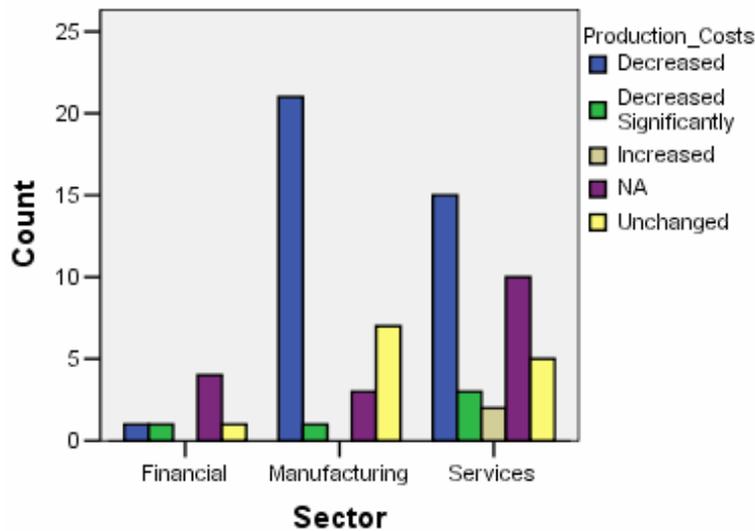


Business Results

Questions 16 & 17 – What Economic and Operational business results are being impacted by technologies? What Strategic areas are being impacted by information technologies?

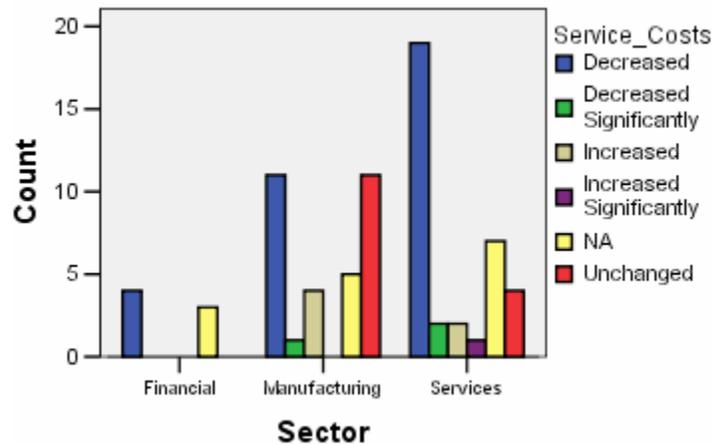
Technology is indeed having a deep impact on the economic and operational business results. While comparing online business with traditional business, it was found to differ significantly with respect to R & D Costs, Production costs, service tasks performed by customers, technology costs and Human Resource Costs, as shown,

Figure 13.0 – Trends in Production Costs



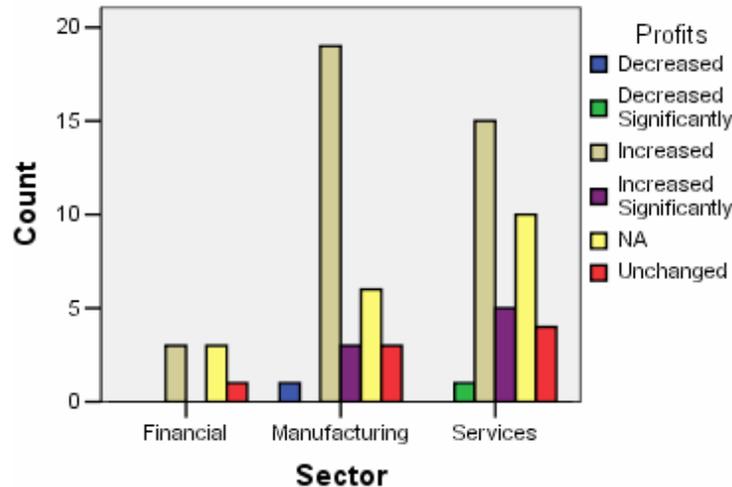
More than half the organizations (56.8%) report a decline in production costs, followed by 50% reporting a decrease in service costs and 46% in HR costs.

Figure 13.1 – Trends in Customer Service Costs



An overwhelming 60.8% reported increase in profits vis-à-vis 59.5% for increase in revenues, while 51.4% reported a higher market share. Costs have also decreased for consultancy and collaboration (33.8%) and internal communication (75.6%). Almost half the organizations (46%) reported a reduction in the new products' time to market and 35.1% reduction in new products' failure rate.

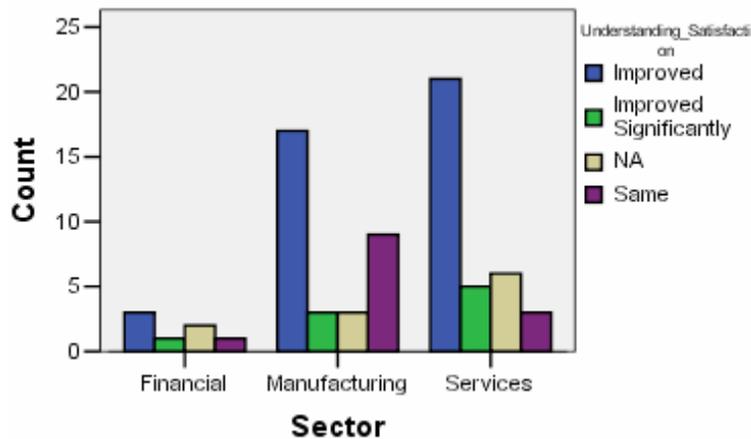
Figure 13.2 – Trends in Profits



44.6% of the organizations reported an increase in the number of new products and 43.3% reported increased expenditure in technology. While manufacturing organizations have saved the most in internal communication costs (87.5%), production costs (68.7%), new products' time to market (59.4%) and HR costs (50%), service sector organizations have saved the most in customer service costs (60%), production costs (51.5%) and market research costs (45.7%).

Technology has significantly impacted certain strategic areas in the organizations. Understanding of customer satisfaction for current products and services (67.6%) and knowledge of competitor's products and services (64.9%), understanding of customer buying behavior (63.6%) and future product expectations (62.2%) has improved due to technology.

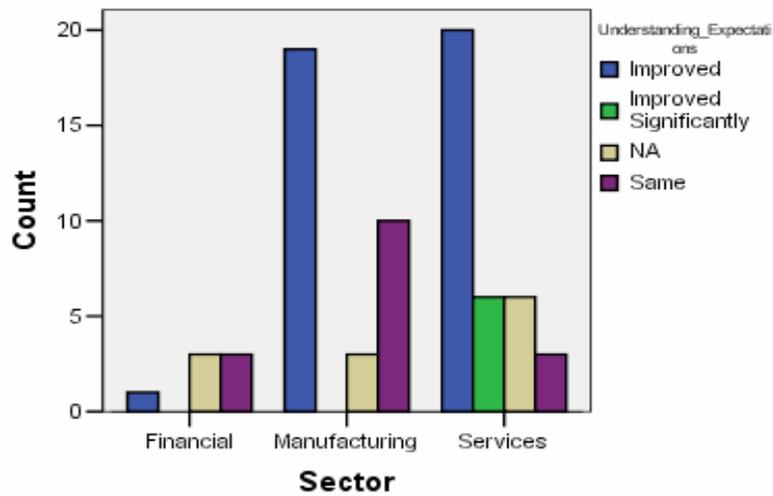
Figure 13.3 – Impact of Technology on Understanding Satisfaction



Across sectors, technology has helped increase the understanding of customer satisfaction for current products and services by 74.3% in services, 62.5% in manufacturing and 57.2% in financial sector organizations. Service sector organizations have benefited maximum in understanding customer

expectations through technology (74.2%) as compared to manufacturing (59.4%) and financial (14.3%) sector organizations.

Figure 13.4 – Impact of Technology on Understanding Expectations

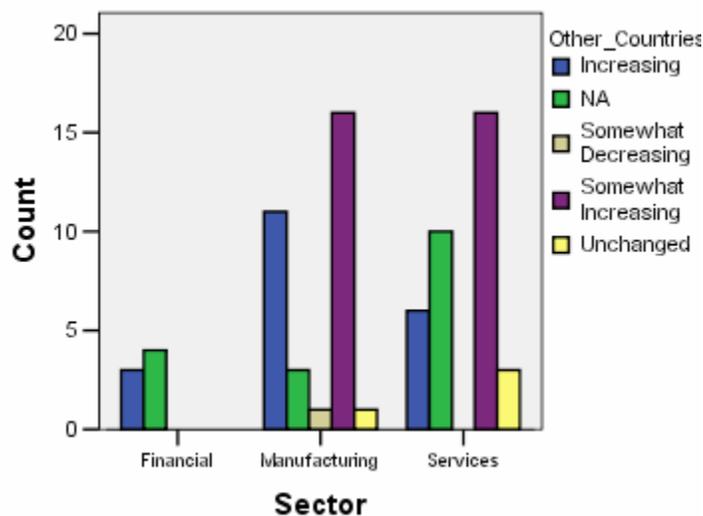


Globalization

Questions 18 & 19 – Are organizations becoming more global? Is the geographic reach of organizations increasing?

Organizations are expanding their geographic reach with over two thirds (70.2%) indicating an increase in trade in other countries, distributors/branches around the world (55.4%) and number of production/service bases (50%). Number of countries in supplier base, average distance to suppliers/vendors and the number of languages on the website are also increasing.

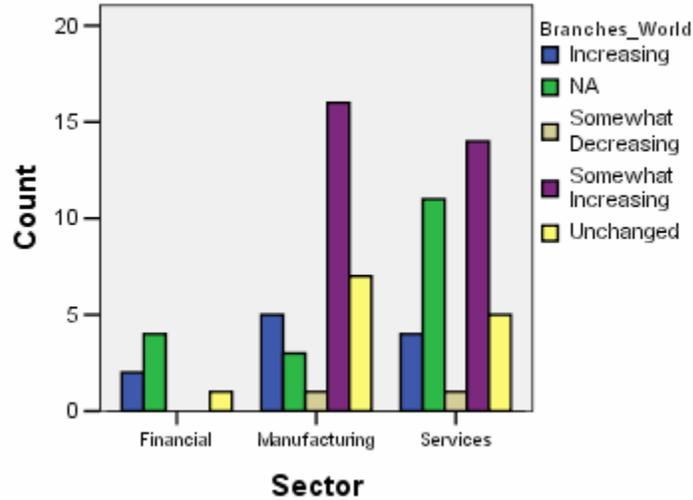
Figure 14.0 – Trends in Trading in Other Countries



Trade in other countries has increased most significantly in manufacturing sector organizations (84.4%), as compared to financial sector (42.9%) and service sector (62.8%). Same trend holds good for

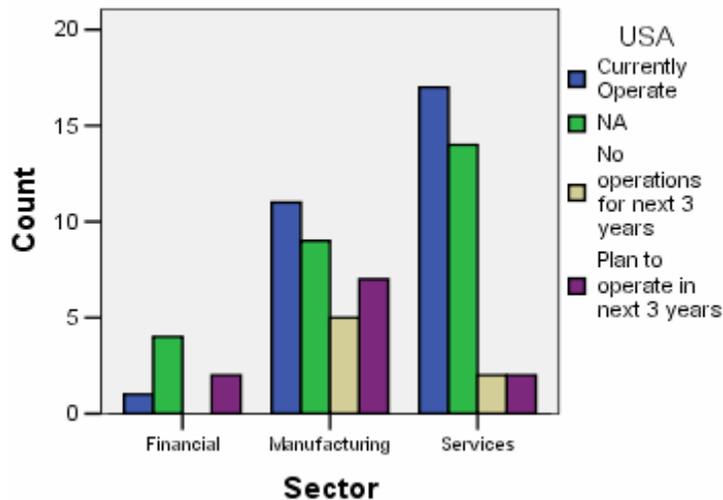
distributors/branches across the world with manufacturing (65.6%) vis-à-vis financial sector (28.6%) and services (51.4%)

Figure 14.1 – Trends in Number of Distributors/Branches around the world



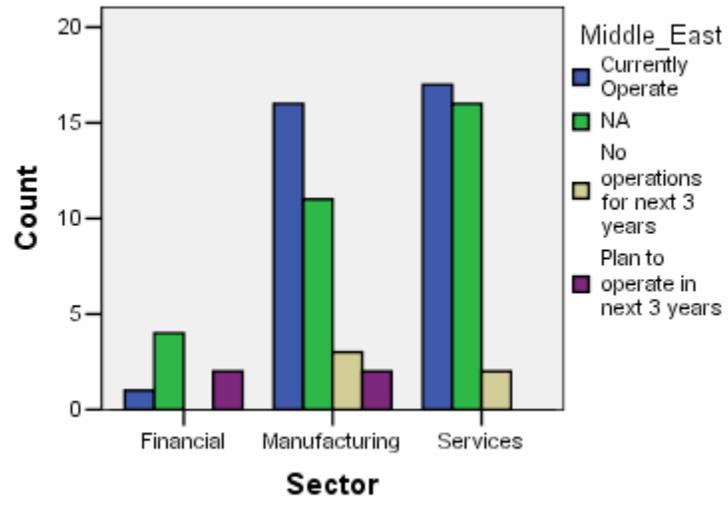
With respect to globalization, over half of the organizations, either already have operations or plan to enter in the near future into USA (54.1%), South Asia (52.7%), Western Europe (51.3%) and Middle East (51.3%). Around one third have/plan to have operations in Africa (35.1%), East Asia (35.1%) and Central and Eastern Europe (31.1%); about a quarter have/plan to operate in Canada and Mexico (29.7%) and Latin America (24.3%).

Figure 14.2 – Trends in organizations' US Operations



Across the three sectors, most number of service firms currently have operations in the USA (48.6%) while, 28.6% of the financial sector organizations plan to operate there in the next 3 years. The same trend holds good for Canada and Mexico, while manufacturing sector dominates in the Western European region with 46.9% of the organizations currently operating as compared to financial sector (14.3%) and services (45.7%). 50% of the manufacturing organizations operate in the Middle East compared to 14.3% in the financial sector and 48.6% in the services sector.

Figure 14.3 – Trends in organizations' Middle East Operations



Appendix A: Survey Methodology

The base line BIT study was conducted as a survey through questionnaire mailed to target organizations in multiple industry sectors. Each subject in the study was an independent organizational entity that controlled its own information technology and information policy, and had a Chief Information Officer (CIO) or similar management position within it. It is likely that since the subject organizations are able to make their own technology decisions (and investments), they also have profit and loss responsibility, although this is certainly not necessarily always the case. The surveys were addressed to the CIO (or similar position) as the person most likely to be knowledgeable about the subject.

Major issues of interest were developed, which were then used to generate survey questions. The survey instrument was mailed to a database of over 700 individuals across all industry sectors in the India. The CIOs (and related positions) were requested to complete the survey by mail.

The survey instrument (questionnaire) has seven major sections:

1. *Technology Adoption/Infrastructure and Budget Trends* – technologies adopted and budget trend
2. *Internal Organization* – changes in the internal organization's workforce, structure and in business process outsourcing due to technologies
3. *Customer Facing Interactions* – changes in advertising, image, relationship management and other customer facing interactions due to technologies
4. *Trading Partner Relationships* – changes in partner communications and purchasing mechanisms used due to technologies relationships
5. *Business Results* – operational and economic business results and strategic areas impacted by technologies
6. *Globalization* – globalization of the organization due to technologies
7. *Organizational Profile* - the basic “demographics” of the organization

Appendix B: Sample Profile

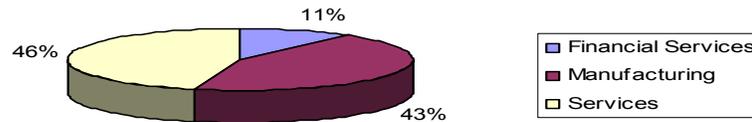
74 valid responses were received. The profile of the sample is as follows,

Sector Wise Break Up

Financial Services: 8

Manufacturing: 32

Services: 34



Size of organization in terms of,

Annual Revenues

Up to 100 crores	24.32%
100 crores to 500 crores	21.62%
501 crores to 1000 crores	14.86%
Over 1000 crores	20.27%
No response or not applicable	18.92%

Sectors of organizations

Chemical	4.05%
Insurance	1.35%
Bank	6.76%
Mutual Fund	2.70%
Cement	2.70%
FMCG	6.76%
Engineering	20.27%
Information Technology	16.22%
Textile	4.05%
Pharmaceuticals	4.05%
Consultancy	10.81%
Telecom	2.70%
Publication	1.35%
Retail	4.05%
Marketing	2.70%
Education	4.05%
Media	2.70%
Infrastructure	1.35%
Other	1.35%

References

[1] Karmarkar and Mangal, The Business and Information Technologies (BIT) Survey Annual Report 2003-04.

[2] www.worldinternetproject.org

[3] www.nasscom.org