

# Perspectives on information and supply chains within investment banking

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## **Abstract**

Supply chain concepts are usually confined to industries where there are core sourcing, manufacture and delivery processes. These industries are usually to be found within the industrial products, aerospace, automotive, chemical and pharmaceutical sectors. Supply Chain Management (SCM) concepts, have not necessarily been associated with financial services, apart from concepts of information management and process flow, in the loosest sense. This paper attempts to describe how supply chain concepts are very much an inherent part of the financial services process landscape, with particular reference to the field of investment banking. In doing so, the paper explores IT/IS issues impacting within the investment banking industry, focussing on the requirements for efficient distribution of sales and research data. Following this, the authors extend concepts of supply chain and information management, to realise the concept of an Investment Banking Information Supply Chain (IBISC).

**Keywords:** Financial Services, Information Management, Supply Chain

## **Introduction to Investment Banking**

Information and Knowledge management are now key to the continuing strengthening of an organisation's internal competitive advantage, and is now understood to be a cornerstone of a modern day organisation. Over time, organisations have been wishing to extend the depth and breadth of their supply chains to fully embrace external influences upon the company - i.e. their suppliers, partners and clients. The fundamental definition of supply chain management resonates with these issues, and many industries have benefitted from the optimisation of their make-source-move processes. This has been via concepts as varied as lean and agile manufacturing, internet portals and digital trading exchanges, for example.

Investment Banking is concerned with providing professional financial services and advice to institutional (corporates and multinational organisations), as well as affluent and high net worth individuals (HNWIs). This field has therefore always been directly concerned with the effective and efficient supply of market critical information and knowledge (to the right person, at the right place and at the right time). The advent of internet business and technology, has changed and this model has accelerated via available wireline and wireless channels. As such, the financial services industry has pioneered the use of telephone, internet and effective customer relationship management initiatives (telephone, internet and private banking for example). Therefore, a discussion of the supply chain of information within the investment banking field is now long overdue, especially with the development of powerful underlying technologies which strengthen and enable business processes which are integral to investment banking client-facing capabilities. The structure of this paper is as follows. Section 1 deals with providing a brief overview of investment banking, whilst section 2 identifies how securities and trade information can be supplied to relevant stakeholders through bank activities such as equity and derivative research, sales and trading. Section 3 follows, by describing the general aspects of the supply chain of information within core

capital markets processes. Finally, section 4 consolidates concepts of supply chains and information management requirements within investment banking. As such the development of a framework known as the Investment Banking Information Supply Chain (IBISC) is proposed, in order to provide a mapping between business process workflows, process stakeholders and enabling technology to deliver such services.

**Business Operating Model and industry trends**

Investment services firms engage in a multitude of activities, which cover key processes relating to the raising of capital and finance; issuing of securities and other financial instrument products; brokerage and execution of financial products; investment management and advisory services. Typical clients for such services, include not only corporate and institutional organisations, but also other banks, governments and high net worth individuals (in the case of private banking and asset management). Figure 1 shows a generic business model of the industry which is principally governed by external factors such as regional and global economics, regulatory bodies, shareholders and competitor firms. As such, the industry is divided into three general areas: investment banks (who provide underwriting and advisory services); full-service brokers (who specialise in brokerage and underwriting to corporations and individuals); and Discount brokers (who offer low-cost, high-volume brokerage services to individuals only). Underpinning the whole of the investment banking business operation is the large IT quotient, which helps to drive the investment banking operations between a firm's clients and the markets in which financial instruments are generated, exchanged and underwritten.

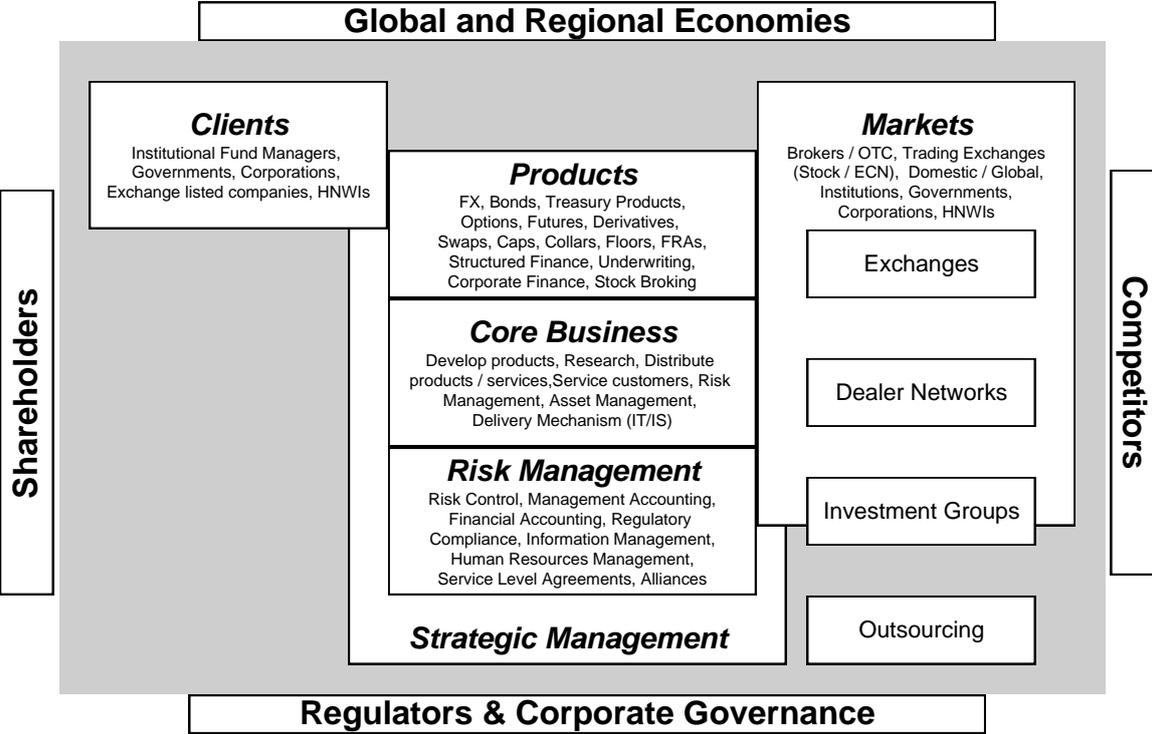


Figure 1. Generic Investment Banking Business Model

Investment banks, then, at their heart, provide three core functions in order to deliver their products, operate as a business and minimise their exposure to risk:

- *Financial Instrument Sales and Trading*: Via research and analytical intelligence gathered by their research departments, investment banks can command attention and leverage their relationships with their clients in order to promote, sell and broker financial products and investment management services.
- *Capital and Corporate Financing*: Delivering the capability to fund and finance initial public offerings (IPOs), mergers and acquisitions activity, leveraged buy-outs, and other forms of financing in order to maximise the usage of capital for an organisation.
- *Research and analysis of Financial Instruments, Markets and Sectors*: essential intelligence on publicly traded companies, exchange-traded products (securities, currencies, bonds, commodities and information on key business sectors. The financial investment industry is beginning to understand that a common definition and standard for imparting research analyst information, context and content is lacking (which is currently being addressed by initiatives such as those in the paragraph above).

The global investment banking industry has experienced, and is continuing to experience, extraordinary times via volatile economic and credit conditions, but set against a backdrop of high levels of trading volumes, the introduction of new and innovative financial instrument classes and the potential for large market returns. Privatizations and merger activity, have also provided a large amount of work also. The increasingly global nature of investments has financial exchanges throughout the world competing for capital and listings just as investment services firms are competing globally for underwriting shares, trading commissions, and other forms of revenues. As such, some current trends and issues are shown in Table 1, which cover economic, technical infrastructure, information and risk management aspects. Most of the world's major stock and bond markets have enjoyed robust levels of activity over the past few years, notwithstanding periods of sluggishness and of course current credit-based volatility. Industry consolidation and convergence are blurring the worlds of banking, insurance and asset management, reducing the numbers of players competing for market dominance. The world's major exchanges now compete more fiercely for capital and stock listings. At the same time, the world's leading investment service firms compete for trading commissions, underwriting shares and other revenue streams. As individuals recognize the alarming prospect of having saved too little for their old age, an extended period of large-scale investing could well occur.

Over the last 15 years a major channel has emerged – the financial supermarket concept, and which has revolutionized the industry (via firms such as Charles Schwab, Fidelity Investments, Jack White, and Waterhouse Securities). New entrants from outside the financial industry are increasing competitive pressures and further tightening management's focus on the need to control costs and boost efficiency. Regulatory reform and control from bodies such as the Securities and Exchange Commission (SEC) and the Securities Industry Association (SIA), is becoming more an integral part of the industry's operations. Underpinning market liquidity, market access and deal flow is information technology (IT). This encompasses a great many technologies in a number of environments and applications, which can help to deliver a superior customer service of the timeliness and quality which the customer demands. Established, traditional brokerages have proven their ability to compete against high-technology start-ups. Technology has transformed investment services in recent years, bringing tighter competition and lower prices. Advancements in technology now permit daily trading volumes well in excess of 1 billion shares and programmed trading that has caused abrupt swings in prices.

Table 1. Key trends in Investment Banking

<i><b>Business Focussed</b></i>	<i><b>Economy Focussed</b></i>	<i><b>Infrastructure Focussed</b></i>
<ul style="list-style-type: none"> <li>• Increasing Trading Volumes</li> <li>• Consolidations and Mergers and Acquisitions</li> <li>• Globalisation and the Internationalization of Investing</li> <li>• Business Operations</li> </ul>	<ul style="list-style-type: none"> <li>• Regulatory Reform</li> <li>• Global Economy</li> <li>• Emerging Markets access</li> </ul>	<ul style="list-style-type: none"> <li>• Technology</li> <li>• Market Access</li> <li>• Transaction Processing</li> </ul>

With deregulation, different sectors of the broader financial services industry are encroaching on each other's turf also. Information services which provide value-added information, are now fundamental to the life of the sector, such as newsfeeds provided by the likes of Bloomberg, Reuters and Knight-Ridder (to name but a few). In their case, the business of their service is information itself, and when utilised by brokerage and investment firms alongside core banking operations, these services and processes, begin to resemble traditional supply chain structures (IMF, 2000; OECD, 2001; Valdez, 2000). An important aspect of this paper, will be to discuss and envelop the manner in which such business critical information is organised and handled within core investment banking operations. As such, the following section attempts to define some critical aspects of information management in investment banking.

**Operational and Information Management components in IB**

Investment banking is a dynamic and time-critical business sector, where information is king and knowledge is power. Methods which automate business processes and enable the minimisation of risk and maximisation of trading, sales and research capability, are becoming vital contributors to bottom-line efficiency. Hence, technology alone cannot seek to deliver by itself, but in this case must be tied to an accurate model of the operating organisation, as discussed in Section 1. In managing the wealth of information that a bank can handle, the following sections look at two aspects that require information management. These are implemented in a variety of ways across all sections of the bank and across many roles within the organisation also, which are shown in Table 2.

The differing needs of peoples roles in the bank also dictates the type of information system that is used, which generally falls into one of three categories. Decision support systems provide the trader, broker or corporate financier with information that will enable them to reach a decision more quickly or more accurately than the competition, or using an interpretation that is more valuable than that used by the competition, or a combination of all three. Visualisation techniques employ graphical and indexed information to be presented to the end user, to help in the interpretation of data and as an aid to decision support and to enable people to make decisions more quickly by enabling them to reach conclusions much faster from the same initial data. Systems which allow the business to operate and run smoothly, are by far, the most important to the bank. Investment banks rely on the most up-to-the-minute on stock data, including securities prices, economic information and general news and trends. Generally, information needs are satisfied via providing information in a variety of formats : digital and proprietary newsfeeds; paper reports and journals; corporate information databases.

Table 2. Stakeholder mapping

<b>Role</b>	<b>Trading</b>	<b>Sales</b>	<b>Research</b>	<b>Risk &amp; Administration</b>	<b>IT Support</b>
Information Feeds	✓		✓		✓
Decision Support Systems	✓			✓	✓
Visual Systems	✓		✓		✓
Customer Management		✓		✓	✓
Business Operations	✓	✓	✓	✓	✓
Distribution & Infrastructure			✓	✓	✓
Development			✓	✓	✓
<b>Business Impact</b>	Operational	Tactical	Operational, Tactical, Strategic	Operational	Operational and Tactical

Table 3. Investment Banking Operational Functions

<b>Front-Office</b>	<b>Middle-Office</b>	<b>Back-Office</b>
<b>Key processes</b>		
<ul style="list-style-type: none"> <li>• Trading</li> <li>• Broking</li> <li>• Decision Support Systems</li> <li>• Portfolio Analysis</li> <li>• Information Feeds</li> <li>• Communication with the middle and back-offices</li> </ul>	<ul style="list-style-type: none"> <li>• Profit and loss queries</li> <li>• Audit and accounting</li> <li>• Risk Management</li> <li>• Regulatory Reporting</li> <li>• Reconciliation</li> <li>• Credit Risk Control</li> <li>• Accounting</li> <li>• Legal Documentation</li> <li>• Communication with front and back offices</li> </ul>	<ul style="list-style-type: none"> <li>• Trade processing</li> <li>• Settlement &amp; Clearing</li> <li>• Accounting &amp; Reporting</li> <li>• Custody</li> <li>• Compliance</li> <li>• Transaction Processing</li> <li>• Communication with the front office</li> </ul>
<b>Key features</b>		
<ul style="list-style-type: none"> <li>• Client-facing and revenue producing</li> <li>• Enables the trader or broker to make sense of a wealth of data which they would not have the time to fully interpret</li> <li>• Must provide contextual content : risk management, visualisation of financial market data and analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Encompasses essential functions of office administration and risk management (costings, client or personnel information).</li> <li>• Gather / execute decisions based upon historical trade data and assessment of a client's credit</li> <li>• View client accounts and settlement information (useful to clearing in the back-office)</li> </ul>	<ul style="list-style-type: none"> <li>• Administration of all client-facing and risk management processes</li> <li>• Administering results of sales and trading operations (settlement, clearing, reconciliation)</li> <li>• Information and data-hub</li> </ul>

By getting access to this information quickly, competitive advantage can be gained. Business operations need to be supported by administrative systems which can assist in the running of the investment bank's operations. Generally, such systems fall into a three-tier architecture: front-office, middle-office and back-office operations. A summary of the main processes in each stage is given Table 3. Indeed, many of the leading 'bulge bracket' investment and brokerage houses, are keen to leverage internet technologies and collaborate together, such as the online short selling securities platform, Equilend (Skorechi, 2001); the equities research information portal, TheMarkets.com (Project Clara, 2001); and the on-going development of a global messaging and exchange standard for research information, RIXML (RIXML, 2001).

Products are now available which manage the flow of transactions in a similar way (Workflow) to how the management of the flow of documents in an organisation are automated. These products are beginning to be used in banks to automate dealing transactions, routing them through the back-office as necessary, which speeds up settlement and the production of accounting records, for example (Meridien, 1999). The process of automating the processing of trades in the middle and back-office is referred to as straight-through processing (STP). A greater degree of automation in these offices reduces the total staff time spent on administration and settlement, freeing those resources for areas where greater competitive advantage can be sought, or enabling the firm to reduce its overheads. The ultimate goal of STP is that the entire process be automated from the point at which the order is made through to final settlement, with applications only requesting human intervention in exceptional circumstances. This level of processing is not common at present, but applications are slowly getting closer to this ideal. Another example of using workflow is in the generation and distribution of research.

From the preceding discussions about various forms of information management found in investment banks, the notion that financial services (and investment banking in particular), is not a supply traditional chain-focussed industry, can be said to be generally incorrect. On the face of it, investment banking routinely and regularly, involves operations which are not just confined to stocks, shares, foreign exchange, asset backed securities, futures, derivatives, corporate finance and wealth / asset management. Rather, the most visible aspect of capital market operations, is the supply and trade of finance-related information. This information, describes, upholds, authenticates and delivers such instruments between institutions and their clients. Therefore it is imperative, that such information is timely, accurate and a true representation of capital commodities (common stocks, shares and other derivative products). It follows, that such processes are in some way in the best auspices of supply chain management (SCM) definitions. The following section draws out these ideas in order to describe an Investment Banking Information Supply Chain (IBISC), and thenceforth provide a framework for mapping processes, technologies and core operating requirements.

### **Investment Banking Information Management Supply Chains (IBISC)**

In noting these definitions, Table 4 shows the equivalent supply chain concepts which have their parallel in investment banking operations. Table 4 shows the various component parts of an IBISC and shows that clearly there are 'make-source-move' aspects to the supply and context of investment banking information. Hence, as such, at each step within this lifecycle, the flow of such information helps to assist and deliver a financial service business process. Particularly in the field of investment banking and brokerage, this is an imperative and fundamental requirement. Information within the supply chain is the commodity itself. For example, a SWIFT transaction is a message detailing payment of monies as well as defining the account transfer of monies themselves.

Table 4. Mapping of key logistical stakeholders in investment banking

<b>SCM Equivalent</b>	<b>What</b>	<b>How</b>	<b>Where</b>
<b>'Make'</b>	Issue / IPO, primary market products (foreign exchange, treasury products, bonds, equities, derivatives)	Analyst report, market report, exchange filing, Trading floor / system, Institutional marketing	Institutional organisation, Central Bank, National Government, Corporate organisation, Industry media
<b>'Source'</b>	Primary & Secondary market, client, broker, analyst, clearing bank, central bank, issuing bank, regulatory authority	Investment bank, Central bank, Institutional Fund Manager, National Government, research distribution services,	Stock Exchanges, Brokers Secondary and "after market" exchanges (e.g. 'over-the-counter' exchange traded derivatives, OTC ETD)
<b>'Move'</b>	Trading, Settlement, research distribution, depository account, bill presentment and payment, Swaps (FX, interest rate), Derivatives, Futures and Options products	Stock Exchanges, Electronic Communications Networks (ECNs), Clearing and Payment Systems (SWIFT, CHAPS, CREST, BACS)	Issuing Bank, Clearing Bank, Investment Bank, Settlement service, Exchanges

In other words, this process entity includes the process information, the commodity being moved, as well as the notification of the product that the transaction relates to. Therefore, in the best auspices of supply chain definitions, the information in and about the supply chain within the investment banking operation transaction, is the commodity which is most typically delivered.

### **Definition of an IBISC – information flow examples**

This section outlines some key processes which rely on effective flow of information across the sales, research, trading and client management processes. Figures 2 - 4 show these business processes and flows, where the dotted line shows the boundary of the internal organisation across which business is generated and conducted. Clearly what is common to all three of these examples is the fact that a particular business process operation is very much reliant upon a distinctive team and operational strategy. This is vitally important to the business operations, as factors such as regional and global economic conditions can greatly effect the value of currencies, stocks and bonds and must be guarded against. Therefore, within each of the se operational strategies there is always, and must be, some form of risk management.

Another factor that defines the fluidity of each of these flows, is the extent to which a particular team has lines of communication both internally, and externally, to clients. This can be through a multitude of formats: telephone, fax, email, teleconferencing, and videoconferencing. In order to transmit or deliver this information, there must be a distribution mechanism which supplies the information to the required stakeholders. This is usually defined as part of an information and technical architecture in the bank. Once again, this communication channel can be based upon the technologies previously mentioned, but is most often in the form of hard or soft-copy reports and articles which are emailed directly to the client. As such, each of these example flows show similarities to traditional supply chain management concepts (i.e. the make-source-move paradigm).

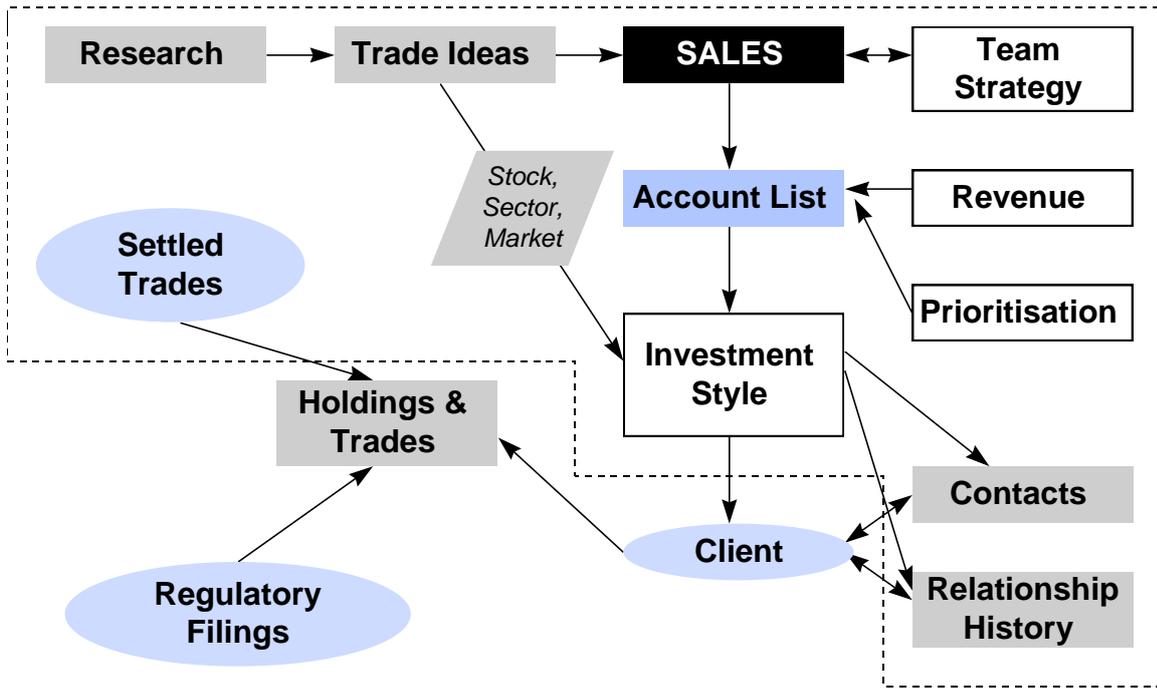


Figure 2. Example of a generic Equities Sales Cycle

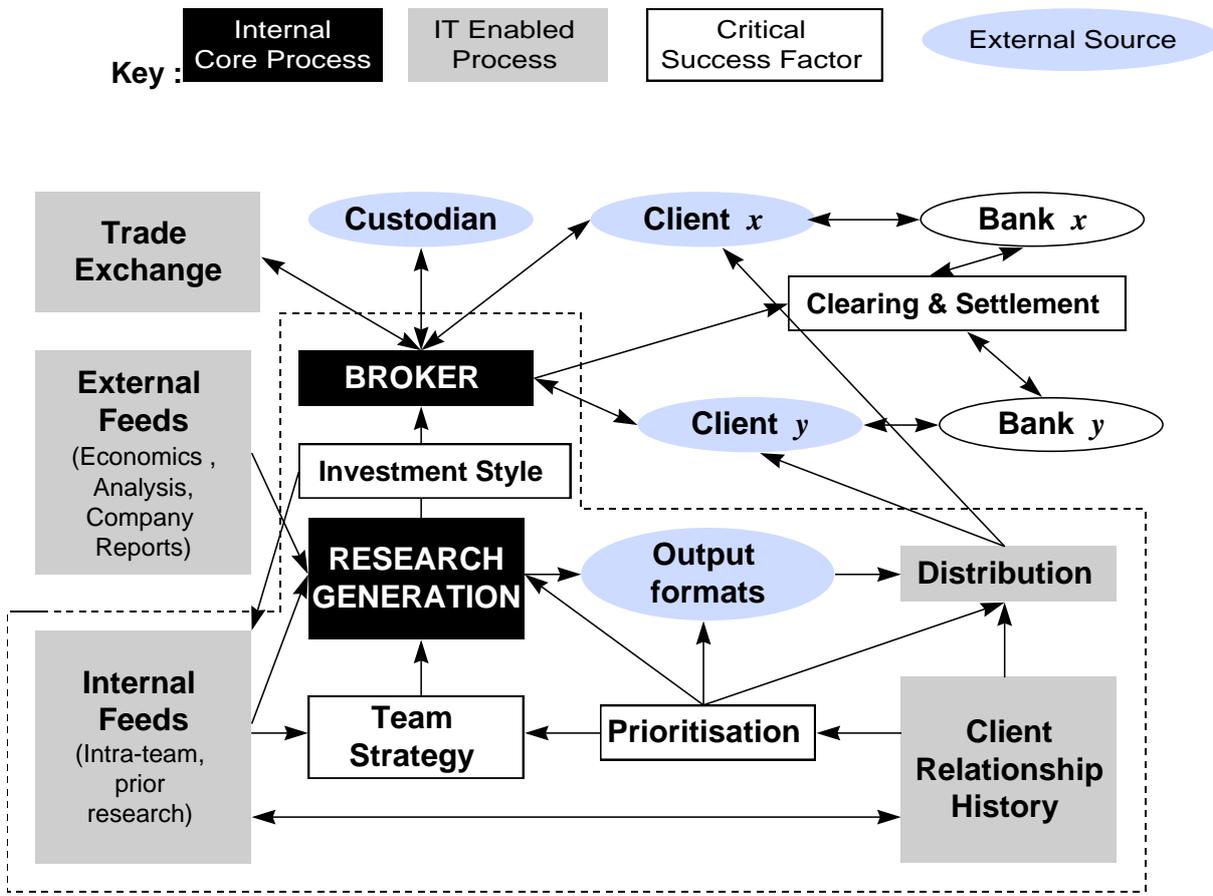


Figure 3. Example of a generic Research and Trading Cycle

These information flows, show just how inter-related processes can be and signify a high degree of interaction and integration between people, processes and technology. It is perhaps for this reason, that this industry sector has notably regularly embraced and adopted leading-edge technology and implemented it in order to derive the maximum benefit from the ensuing development. The value-add of this IBISC, is to be found not just in the execution of the processes in the chain itself. Rather, the way in which decisions about how the information is used to make trading decisions, is the key differentiator of this type of supply chain. This differentiator, in terms of investment banking value-added knowledge, is in the form of market and global economic news, as well as equity, credit and sector research analysis (Meridien CM&D ref here). This is no different to any other definition of a supply chain, and can be succinctly written as a functional of (shown in Figure 4):

$$IBISC = f\{\sum(\text{information, financial instrument, delivery mechanism, market analysis})\}$$

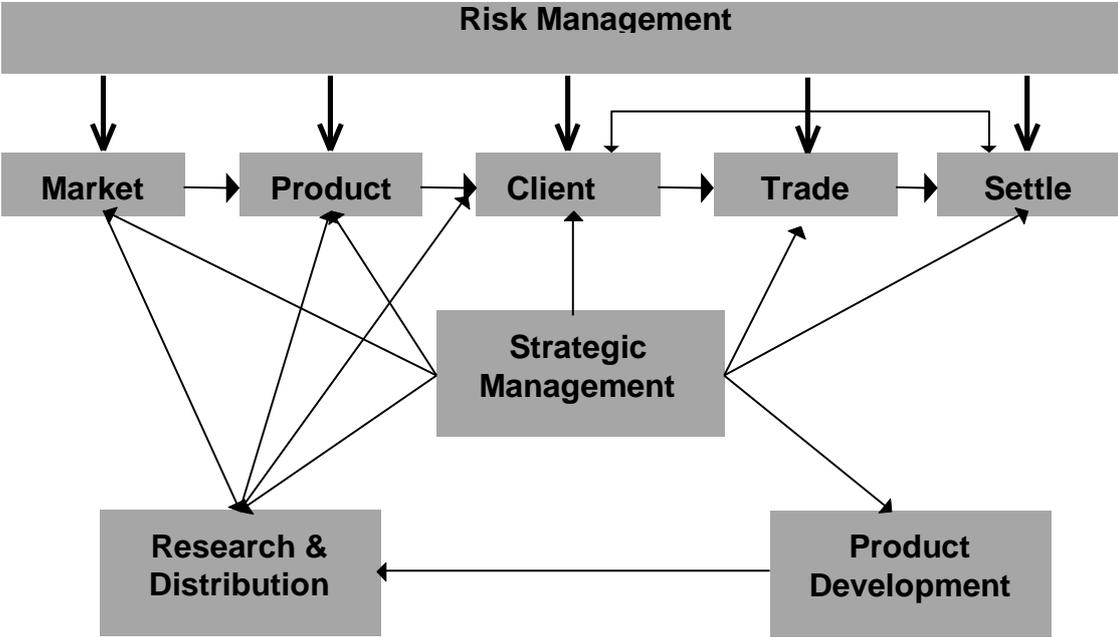


Figure 4. IBISC Dependencies

These dependencies show that there is a close relationship between the management and execution of the investment banking business. In order to maintain profitability, no single factor - client management, enabling technology or core business operations - can exist or provide benefit to the business in its own right and is part of a wider set of processes and information dependencies (see Figure 5). All of these constituent parts must be integrated and more importantly, synchronous, in order for rapid and dynamic business to be executed.

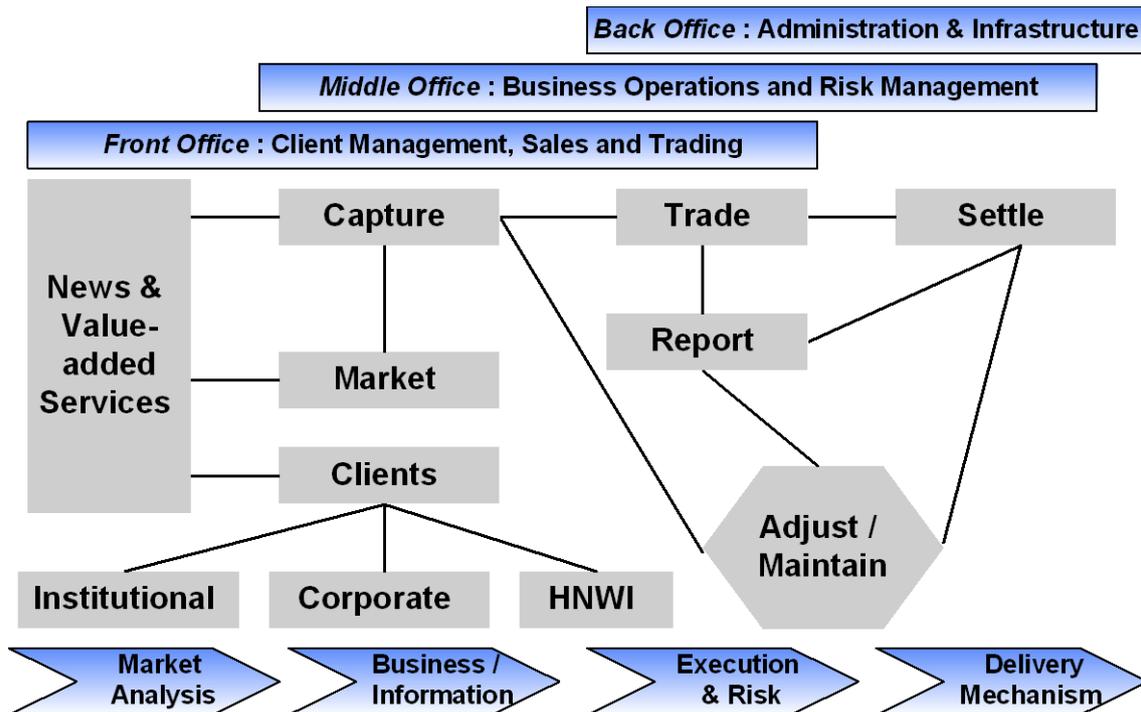


Figure 5. Information supply chain within Investment Banking operations

### **Conclusions**

Information management is critical to a modern agile organisation, especially in the financial services sector. The understanding and modelling of supply chains can help to define and distinguish an organisation in terms of their core values and operating behaviour. This is critical in terms of investment banking operations, where the margins for error and success are very fine, and have a direct consequence on the running of the business. The field of Capital Markets, is a vast and complex area, where the impact of technology to enable processes and day-to-day operations, has been seen to be of critical importance to sustaining competitive advantage.

This paper has highlighted that the field of investment banking and brokerage in general, is undergoing rapid change, supported by an increasing amount of change in terms of the underlying enabling technologies also. The authors also provided an overview of some key strategic measurements and objectives, through a balanced scorecard for the industry. As such, in order to recognise the capabilities and characteristics of organisations in this arena, it was discussed that investment banks rely upon the key processes of trading and sales, financing and research. These processes were analysed through investigating generic information flows, which in turn led to the generation of an Investment Banking Information Supply Chain (IBISC) concept. This supply chain was found to be equivalent in form to any other supply chain that can be found in the process or manufacture industries. The only exception with this particular type of chain, lies with the degree of direct visibility of the chain, visible through discrete sub-operations such as stock trading, sales and research to specific client types.

More importantly, it was found that supply chain concepts in this field, actively align and involve components of strategic management, delivery, execution and feedback as a matter of course. The inclusion of strategic planning and client relationship feedback is further underpinned by technology. It is perhaps for this reason that the processes and information

flows in investment banking are so vital to the fast moving and dynamic requirements of the business. This tight integration of planning, process and interlinked feedback, distinguishes this type of supply chain, from many others, not least because of its high information content.

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