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INTEGRATION OF INFORMATION SYSTEM PLANNING INTO  
BUSINESS PLAN IN MOBILE BANKING

(Yüksek Lisans Tezi)

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**Dedicated to All Software Engineers who had suffered from missing integration analysis during the project life cycle.**



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## ÖZGEÇMİŞ

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Mezuniyetten sonra 1996 – 1998 yıllari arasında Koçbank Bilgi İşlem Bölümünde Analist Programci olarak Çeşitli bankacilik projelerinde ,1998- 2001 Yillari Arasında Turkcell GSM "de entegrasyon ve yazilim geliştirme projelerinde Çalışmıştır.

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## **ABSTRACT**

The main objective of this academic study is to build up a new methodology, model which take place a bridge on implementing a business plan into information system plan on the mobile banking project.

Every year substantial amount of time, work force and financial sources are dedicated to IT projects in order to supply the needs of business world. At this stage, Information System Plan, which makes mainly the design of information flow, fully depends on the Business needs. On the Other hand, Businesses today face intense pressures, deregulation, mergers and acquisitions and restructuring. These pressures make it extremely difficult for information technology organizations to keep pace with the company's business strategy. In this environment of rapid business change, business strategies and requirements often shift before business applications built the conventional way.

Economic Crisis, flood of new technologies, chronic shortages of trained staff becomes unforeseen elements during every project's plan.

In the First Section, I will go through building an Information System Plan and will explain the two main approaches, enterprise analysis and critical success factors which Identify the Information need in information systems. After that I will explain the historical and innovative perspectives of building information system plan by explaining IBM's approach and Microsoft's approach.

In the second Part, Business Plan will be explained with definitional, managerial and functional perspectives. Variables, which are the volatile entity in Business

plan, will be assessed theoretically. M-Commerce, which is the root level of Mobile Banking application, is going to be reviewed also.

After that, The Gap Analysis between information and business plan will be explained through academic research of Dyson Approach. Decision support mechanism will be explained in Dyson Approach regarding to minimize gap between information and business.

The section Following the Gap Analysis is the Model of “Integrated Information model” Part which is the outcome or deliverable of this master thesis.

In the Last two sections the tool and technology used in mobile banking will be explained in detail.

## ÖZET

Çalışmanın amacı; Mobil Bankacılık uygulamasında iş planı ile bilgi sistemleri planı arasındaki boşluğu dolduran bir model geliştirmektir. Bu model ki bir metodoloji şeklinde de açıklanabilir, iş ihtiyaçlarını karşılamaya çalışan bilgi sistemleri planıdır. Entegre Bilgi sistemi planı adını verdiği bu plan , iş planından aldığı mobil bankacılık projesine has değişkenlere dayalı olarak diagram bir şekil ile açıklanacaktır. Bu model, birçok proje planlarının hazırlanmasında kullanılan Microsoft visio da hazırlanmıştır ve bağımsız bir iş planı üzerine kurulmuştur.

Her yıl muazzam bir zaman, iş gücü ve finansal kaynak iş dünyasından gelen ihtiyaçları karşılamak için bilgi sistemlerine ayrılmaktadır. Bu safhada bilgi akışının tasarımını yapan bilgi sistemleri planı tamamiyle iş dünyasının ihtiyaçlarına bağlıdır. Öte yandan , bugünün iş dünyası yoğun bir baskı , birleşmeler , satın almalar , satın almalar , yeniden yapılanmalar ile karşı karşıyadır. Bu baskılar bilgi teknolojileri organizasyonlarını şirketlerin iş stratejilerine ayak uydurmada zorlamaktadır. Böyle hızla değişen bir ortamda , iş stratejileri ve gereksinimleri, uygulamaların klasik yollarla uygulanmasından önce değişmektedir.

Ekonomik krizler , yeni teknolojilerin gelmesi , kronik olarak yetişmiş eleman azlığı tüm proje planlarında önceden tahmin edilemeyen kavramlar olmaktadır.

Tezimin ilk kisminda , bir bilgi sistemi kurulumunu anlatarak , bilgi sisteminde en önemli nokta olan bilgi ihtiyacini analiz eden Enterprise Analysis ve Critical Success Factor yaklaşımlarini açıkladim. Bu bölümde daha sonra yenilikçi ve tarihsel olarak bilgi sistemleri planinin kurulmasına değinilecek ve Microsoft'un yenilikçi , IBM'in ise yakin geçmişte baz aldığı yöntem açıklanacaktır.

Ikinci kisminda İş plani , tanımsal yönetimsel , fonksiyonel bakış açısından açıklanacaktır. Bir İş planindeki değişken parametreleri simgeleyen Değişkenler teorik olarak değerlendirilecektir. Ayrıca mobil bankaciliğin içinde bulunduğu uygulamaları simgeleyen m-commerce kavramı açıklanacaktır.

Tezin üçüncü kisminda , bilgi ve iş ihtiyaçları arasındaki boşluk, Robert Dyson tarafından yapılmış akademik bir çalışma ile açıklanacaktır. Bu yaklaşımdan sonra, tez içersinde yapılan araştırmaların sonucu olarak geliştirdiğim bir model olan entegre bilgi modeli adlı bir metodoloji açıklanacaktır.

Tezin son kisminda ise mobil bankacilik uygulamasinin teknolojik altyapisini anlatan teknik yapıyı , mobile bankacilik uygulamasinin altyapi detaylarını anlatan bölümleri bulabilirsiniz.

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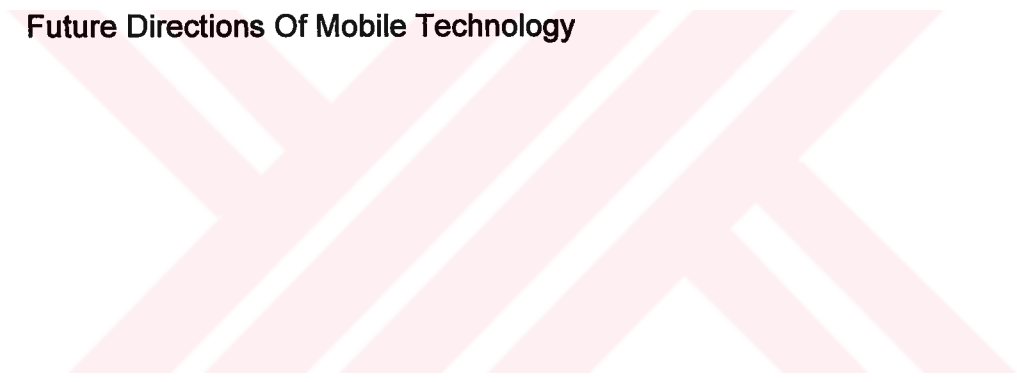
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## I. INTRODUCTION

Integrating a new information system into business plan is a challenging issue for all organizations from public industries to private.

The key to being successful in implementing a new system begins before we build the first module. A successful implementation starts by having a comprehensive strategy and justified business reason for putting the system in. The system is simply a tool to help you become more productive, more efficient, and with better information to aid you in building key business decisions.

Many times, information systems are driven by technologies with little regard for optimizing business performance. People accept the technology on faith, without identifying the actual benefits the system will bring. Companies like this end up implementing information systems, only to be somewhat disappointed that the system is not performing as they had expected. The result is an information system that does not optimize business performance and often prevent business activity.

The business goals and plans of the company should be the driving force behind developing a successful information systems strategy. This strategy must synchronize with the business in order to simplify and automate standard practices, enhance decision-making, and provide the company with a competitive advantage. By developing a comprehensive information systems strategy that includes people,

process, and technology, companies can truly identify and obtain the benefits of implementing an information system.

In this academic research, I will build a methodology in order to integrate these two plans on mobile banking business in Turkish gsm-mobile market . While building this methodology, I will go through the definitional and historical approaches of information system planning and business planning , cultural and economical perspectives of Turkish mobile banking business through interviews with mid-level managers in a <sup>1</sup> GSM company.



<sup>1</sup> Global System For Mobile Communication :GSM , A Telecommunication technology Set Of Standards.

## **1. Information System Planning**

### **1.1 Building an Information System**

Information system is a system whose principle operations are to collect, organize and manage information. On the other hand According to Bostrom and Heinen ,1977 , Information System as being a socio-technical entity is an arrangement of both technical and social elements. The introduction of a new information system involves much more than new hardware and software. It also includes changes in jobs, skills, management and organization. In the socio-technical philosophy, one cannot install new technology without considering the people who must work with it (Bostrom and Heinen, 1977).

In other words, when we design a new information system, we are redesigning the organization. Building a new information system is one kind of planned organizational change. Frequently, New systems mean new ways of doing business and working together.

“Deciding what new systems to build should be an essential component of the organizational planning process, organizations need to develop an information systems plan that supports their overall business plan” (Reich and Benbasat, 1996). Once specific projects have been selected within the overall context of a strategic plan for the business and systems area, an information system plan could be developed.

### **1.1.a Definition Of Information System Plan**

“Information System Plan is a road map indicating the direction of systems development, the base, the current situation, the management strategy, the implementation plan and the budget.” (MIS Quarterly 2000, Page 385, Redesigning the Organization with Information Systems)

In other words, Information System Plan is the master plan, which contains a statement of corporate goals and specifies how information technology supports the attainment of those goals. The plan shows how general goals will be achieved by specific systems projects.

It should lay out specific target dates and milestones like an ordinary project plan that can be used later to judge the progress of the plan in terms of how many objectives were actually attained in the time frame specified in the plan.

As Usual the most important part of the plan is the management strategy for moving from the current situation to the future. Generally, this will indicate the key decisions made by managers concerning hardware acquisition, telecommunications, centralization, and decentralization of authority.

On the other hand, data and hardware are required for organizational change. Although planning for global information systems is essentially the same as domestic systems, special legal, cultural, and organizational requirements must be considered (Tractinsky and Jarvenpa, 1995).

To develop an effective information systems plan, the organization must have a clear understanding of both its long-term and short-term information requirements.

Historically, there are two principal methodologies for establishing the essential information requirements of the organization as a whole; these are Enterprise Analysis and Critical success factors.

## **1.2 Identify the Information need by two approaches, Enterprise Analysis and Critical Success Factors**

### **1.2.a Enterprise Analysis**

Enterprise Analysis also called business system planning is the analysis of organization-wide information requirements by looking at the entire organization in terms of organizational units, functions, processes and data elements.

Enterprise Analysis argues that the information requirements of a firm can only be understood by looking at the entire organization in terms of organizational units, functions, processes, and data elements. Enterprise analysis can help identify the key entities and attributes of the organization's data. This method starts with the notion that the information requirements of a firm or a division can be specified only with a absolute understanding of the entire organization. This method was developed by IBM in the 1960s explicitly for establishing the relationship among large system development projects ( Zachman,1982).

The Central method used in the enterprise analysis approach is to take a large sample of managers and ask them how they use information, where they get the information, what their environment is like, what their objectives are, how they make decisions and what their data needs are.

The results of this large survey of managers are aggregated into subunits, functions, processes and data matrices.

The strength of enterprise analysis is that it gives a comprehensive view of the organization, systems data usage and gap. Enterprise analysis is especially suitable for start-up or massive change situations. For instance, it is one method used by the Governments which rehabilitates the existing running systems like social security systems to bring about a long term strategic change in its information processing activities.

The weakness of enterprise analysis is that it produces an enormous amount of data that are expensive to collect and difficult to analyze it. It is a very expensive technique with a bias toward top management and data processing. Most of the interviews are conducted with senior or middle managers, with little effort to collect information from clerical workers and supervisory managers. Moreover, the questions frequently focus not on the critical objectives of management and where information is needed, but rather on what existing information is used. The result is a tendency to automate whatever exists. In this manner, manual systems are automated. But in many instances, entirely new approaches to how business is conducted are needed, and these needs are not addressed.

### **1.2.b Critical Success Factors (CSFs)**

**CSF** is another approach on getting information need .In Broad manner, CSF is a small number of easily identifiable operational goals shaped by the firm managers who are believed to ensure the success of an organization.

Critical Success factor approach argues that the information requirements of an organization are determined by a small number of critical success factors (CSFs) of managers. CSFs are operational goals therefore if these goals can be attained, the success of the firm or organization is ensured. (Rockart, 1979; Rockart and Treacy, 1982).

The industry, the firm, the manager, and the broader environment shape CSFs. This broader focus accounts for the description of this technique as strategic. An important point of the CSF approach is that there are a small number of objectives that managers can easily identify and on which information system can focus.

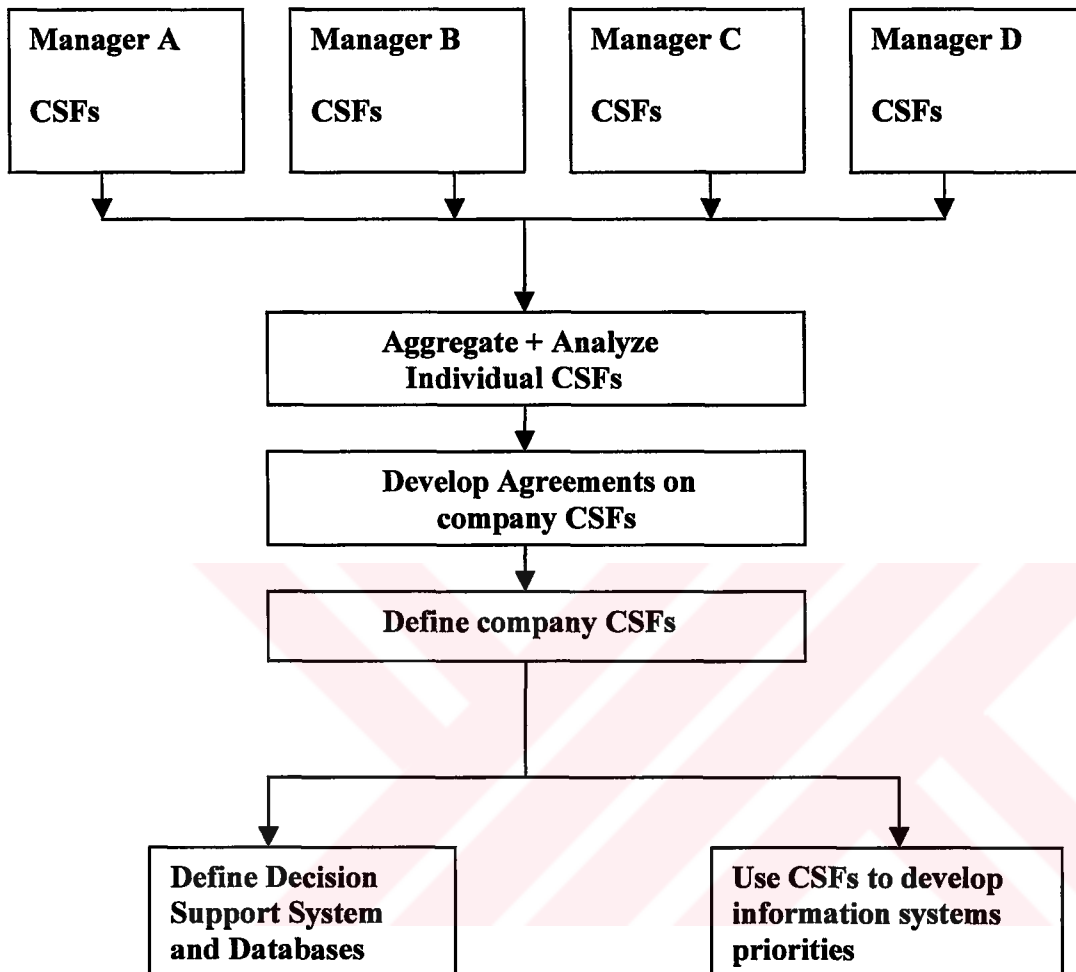
The principal method used in CSF analysis is personal interviews with a number of top managers to identify their goals and the resulting CSFs. These personal CSFs are aggregated to develop a picture of the firm's CSFs. Then systems are built to deliver information on these CSFs.

The strength of the CSF method is that it produces a smaller data set to analyze than enterprise analysis. Only top managers are interviewed, and the questions

focus on a small number of CSFs rather than a broad inquiry into what information is used or needed. This method is can be tailored to the structure of each industry, with different competitive strategies producing different information systems.

The CSF method also depends on the industry position and even the geographical location. Therefore, this method produces systems that are more custom tailored to an organization.

A unique strength of the CSF method is that it takes into account the changing environment with which organizations and managers must deal. This method explicitly asks managers to look at the environment and consider how their analysis of it shapes their information needs. Moreover , the method produces a consensus among top managers about what is important to measure in order to define the organization's success. Like enterprise analysis, the CSF method focuses organizational attention on how information should be handled.



### Critical Success Factor Model

Figure 1.2 , Laudan & Laudan , Management Information Systems ,Prentice Hall

Using CSFs to develop systems. The CSFs approach relies on Interviews with key managers to identify their CSFs. Individual CSFs are aggregated to develop CSFs for the entire firm. Systems can then be built To deliver information on these CSFs.

## **1.3 Historical Approaches to the Information System Plan**

### **1.3.a IBM's approach with Zachman, How to Build Information System**

In the early '80's, there was little interest in the idea of Enterprise Reengineering or Enterprise Modeling and the use of formalisms and models was generally limited to some aspects of application development within the Information Systems community. The subject of "architecture" was acknowledged at that time; however, there was little definition to support the concept. This lack of definition precipitated the initial investigation that ultimately resulted in the "Framework for Information Systems Architecture." Although from the outset, it was clear that it should have been referred to as a "Framework for Enterprise Architecture," that enlarged perspective could only now begin to be generally understood as a result of the relatively recent and increased, world-wide focus on Enterprise engineering.

The Framework as it applies to Enterprises is simply a logical structure for classifying and organizing the descriptive representations of an Enterprise that are significant to the management of the Enterprise as well as to the development of the Enterprise's systems. It was derived from analogous structures that are found in the older disciplines of Architecture/Construction and Engineering/Manufacturing that classify and organize the design artifacts created over the process of designing and producing complex physical products (e.g. buildings or airplanes.)

The Framework graphic in its most simplistic form depicts the design artifacts that constitute the intersection between the roles in the design process, that is, OWNER, DESIGNER and BUILDER; and the product abstractions, that is, WHAT (material) it

is made of, HOW (process) it works and WHERE (geometry) the components are, relative to one another. Empirically, in the older disciplines, some other "artifacts" were observable that were being used for scoping and for implementation purposes. These roles are somewhat arbitrarily labeled PLANNER and SUB-CONTRACTOR and are included in the Framework graphic that is commonly exhibited. The Framework, as it is applied to an Enterprise, depicting Enterprise design artifacts (models,) using Enterprise terminology appears below.

The older disciplines of Architecture and Manufacturing have accumulated considerable bodies of product knowledge through disciplined management of the "product definition" design artifacts. This has enabled enormous increases in product sophistication and the ability to manage high rates of product change over time. Similarly, disciplined production and management of "Enterprise definition" (i.e. the set of models identified in the Framework for Enterprise Architecture) should provide for an accumulation of a body of Enterprise knowledge to facilitate enormous increases in Enterprise sophistication and accommodation of high rates of Enterprise change over time.

From the very inception of the Framework, some other product abstractions were known to exist because it was obvious that in addition to WHAT, HOW and WHERE, a complete description would necessarily have to include the remaining primitive interrogatives: WHO, WHEN and WHY. These three additional interrogatives would be manifest as three additional columns of models that, in the case of Enterprises, would depict: WHO does what work, WHEN do things happen and WHY are various choices made. The state of the art in terms of modeling formalisms, as well as the

inclination to devote energy to produce these additional artifacts is still somewhat limited, certainly in the case of Enterprises. Because experience in modeling is so limited, the examples of models for the cells in the "other three columns" are much more hypothetical and much less empirical. However hypothetical they may be, the remaining three columns of models appear below.

### **The Framework in Zachman's Approach**

The Framework is a generic classification scheme for design artifacts, that is, descriptive representations of any complex object. The utility of such a classification scheme is to enable focused concentration on selected aspects of an object without losing a sense of the contextual, or holistic, perspective. In designing and building complex objects, there are simply too many details and relationships to consider simultaneously. However, at the same time, isolating single variables and making design decisions out of context results in sub-optimization with all its attendant costs and dissipation of energy. Restoration of integrity or retrofitting the sub-optimized components of the resultant object, such that they might approximate the purpose for which the object was originally intended, may well be financially prohibitive.

This is the condition in which many Enterprises find themselves after about fifty years of building automated systems, out-of-context. They have a large inventory of "current systems," built out-of-context, not integrated, not supporting the Enterprise, that are consuming enormous amounts of resource for "maintenance" and are far and away too costly to replace. As a matter of fact, the inventory of existing systems has come to be referred to as a penalty to be paid for the mistakes of the past.

A balance between the holistic, contextual view and the pragmatic, implementation view can be facilitated by a Framework that has the characteristics of any good classification scheme, that is, it allows for abstractions intended to:

- a. simplify for understanding and communication, and
- b. clearly focus on independent variables for analytical purposes, but at the same time,
- c. maintain a disciplined awareness of contextual relationships that are significant to preserve the integrity of the object.

It makes little difference whether the object is physical, like an airplane, or conceptual, like an Enterprise. The challenges are the same. How do you design and build it piece-by- piece such that it achieves its purpose without dissipating its value and raising its cost by optimizing the pieces, sub-optimizing the object.

Although the Framework for Enterprise Architecture is an application of Framework concepts to Enterprises, the Framework itself is generic. It is a comprehensive, logical structure for descriptive representations (i.e. models, or design artifacts) of any complex object and is neutral with regard to the processes or tools used for producing the descriptions. For this reason, the Framework, as applied to Enterprises, is helpful for sorting out very complex, technology and methodology choices and issues that are significant both to general management and to technology management.

In summary, the Framework is:

- a. **SIMPLE** - it is easy to understand ... not technical, purely logical. In its most elemental form, it is three perspectives: Owner, Designer, Builder ... and three abstractions: Material, Function, Geometry. Anybody (technical or non-technical) can understand it.
- b. **COMPREHENSIVE** - it addresses the Enterprise in its entirety. Any issues can be mapped against it to understand where they fit within the context of the Enterprise as a whole.
- c. **LANGUAGE** - it helps you think about complex concepts and communicate them precisely with few, non-technical words.
- d. **PLANNING TOOL** - it helps you make better choices as you are never making choices in a vacuum. You can position issues in the context of the Enterprise and see a total range of alternatives.
- e. **PROBLEM-SOLVING TOOL** - it enables you to work with abstractions, to simplify, to isolate simple variables without losing sense of the complexity of the Enterprise as a whole.

f. NEUTRAL - it is defined totally independently of tools or methodologies and therefore any tool or any methodology can be mapped against it to understand their implicit trade-offs ... that is, what they are doing, and what they are NOT doing.

The Framework for Enterprise Architecture is not the answer. It is a tool for thinking. If it is employed with understanding, it should be of great benefit to technical and non-technical management alike in dealing with the complexities and dynamics of the Information Age Enterprise.

### **1.3.b Microsoft Innovative Approach to the Information System Plan.**

Microsoft as being the leading software giant and innovator to the daily life software has a model while approaching to a business problem before creating a software solution for it. This is a philosophy called MSF , Microsoft Solution Framework.

Microsoft Solutions Framework (MSF) is a suite of models; concepts and guides for building and deploying distributed enterprise systems. Basically MSF helps customers align their business and technology objectives, reduce lifecycle costs of using new technology.

MSF represents a knowledge base and collection of resources containing information on Enterprise Architecture Planning that is iterative and focused on long

term planning while at the same time achieving short-term results, a solution development discipline focused on a unique team and process models used for organizations effective project teams, and managing a project life cycle.

A framework provides the structure to help frame problems and facilitate effective decisions and it provides a structure that facilitates the analysis and development of great solutions. Therefore A framework is not a methodology with predetermined work breakdown structures, tasks and deliverables; it provides flexible ways to apply creative approaches for solving problems.

## **MSF**

Business planners do not only have to determine strategic technology direction for their organization but also manage the complex world of ever changing technology.

The biggest challenge is maintaining coordination between business and technology objectives. At this point, Microsoft offers innovative Enterprise Architecture Planning.

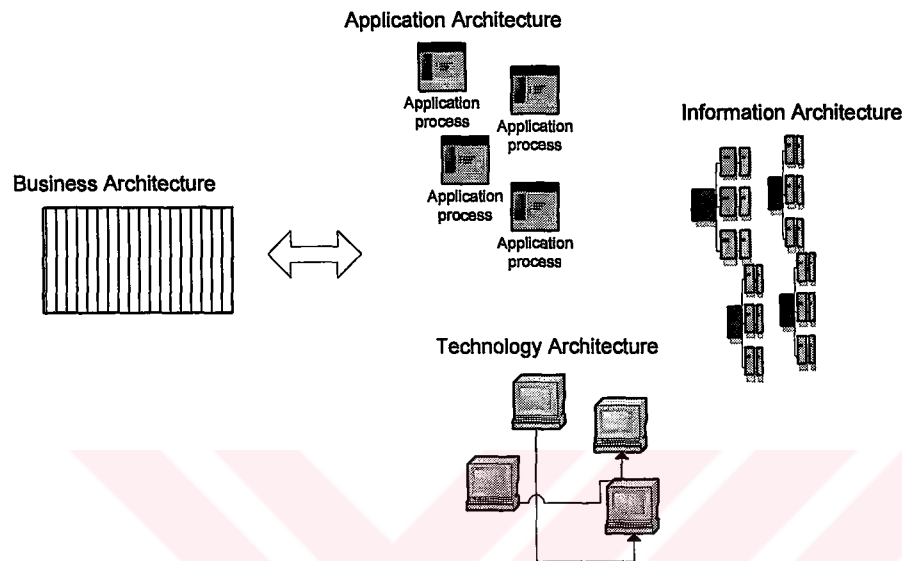
### **1.3.b.1 Enterprise Architecture Planning**

is a framework composed of four perspectives

- Business
- Application
- Information
- Technology

These models describe the components of enterprise architecture and help an enterprise to implement each element effectively, by making each element work together as an integrated system. **Enterprise Architecture Planning** process provides standards and constraints for the business operation to make business more manageable and cost effective.

**Enterprise Architecture Planning** occur continuously as business needs and technology evolve.



**Figure 2.1.3.b.1. Enterprise Architecture Planning (Source Microsoft)**

The Enterprise Architecture clearly describes the business services to be implemented and the technology architecture needed to satisfy the requirements of each business service. The primary deliverable to achieve this for each perspective is the architecture blueprint, which is the primary document, used to implement architecture plans in the organization.

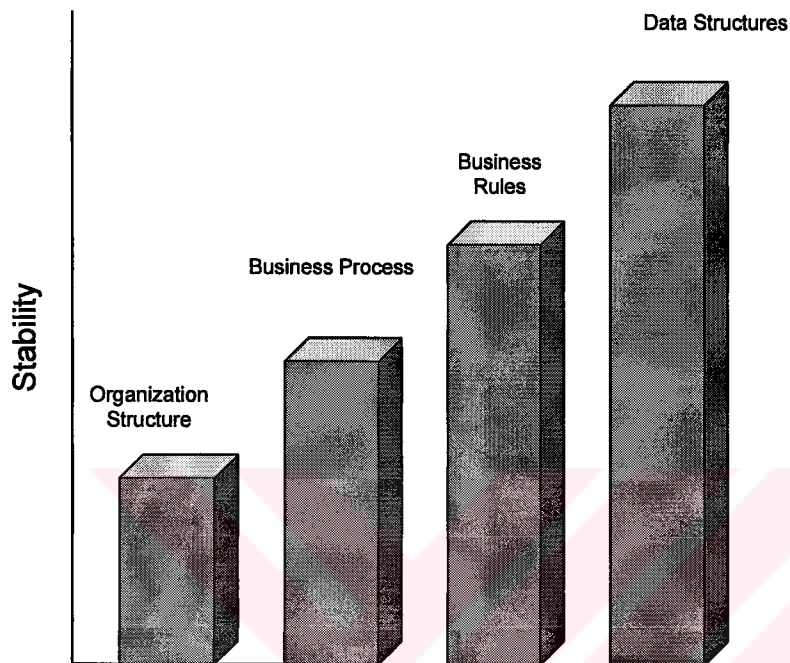
In this model, Each architecture perspective must supports the other. By understanding each perspective, planners can produce improved alignment between the business and technology goals.

### **1.3.b.2 Business Architecture**

Business architecture describes how the business works and describes the functions and the cross functional activities in an organization. The business Architecture helps establish boundaries for clear requirements and development of Vision/Scope for each project.

The business Architecture document describes the enterprise's high level goals and objectives, products and services. It includes broad business strategies and plans for moving the organization from its current state to its future state.

The business activities described in the business Architecture should be categorized based on their stability.



*Figure 1.3..b.2 : Organizational Structures and process , Source Microsoft*

According to Microsoft, Organization structures and cross-functional business processes tend to be less stable.

### **1.3.b.3 Application Architecture**

The Application Architecture describes the standard interfaces, services and application models needed by the business. It describes the automated services that support the business processes depicted in the business architecture and describes

the interaction and interdependencies of the organization's applications. Moreover, It provides guidelines for developing new applications and moving to new applications models.

The Application architecture represents the services, information and functionality that cross-organizational boundaries linking users of different skills and functions to achieve a common business objective. It also establishes priorities for developing new applications and revising old applications. These priorities must map to the business architecture.

In most enterprises, multiple different application models have evolved over time. They coexist with varying degrees of compatibility. The enterprise architect is challenged to coordinate and integrate legacy applications all the time. The Application architecture describes the preferred application models that will meet the ongoing needs of the enterprise.

For that reason, The Application models prescribed by application architecture mainly prevent application teams from producing incompatible interfaces or standalone applications difficult to integrate.

**Deliverables or Outcomes Of Application Architecture** is mainly interaction and dependency models and Application relationship maps.

#### **1.3.b.4 Information Architecture**

The information architecture describes what the organization needs to know to run its business processes and operations. It includes standard data models, data management policies and descriptions of the patterns of information consumption and production in the organization.

The information architecture provides a plan for managing the information flow , planning the location of data , and points of access to information in the organization.

The information architecture defines the essential business object or data categories (such as , customer , transaction, location, date and time ) and maps them to the business processes that own and maintain them .

The Basic Deliverables of Information architecture are Business Object Model, Data models; Information needs model, Interaction models and a Catalog, which lists the current information needs.

#### **1.3.b.5 Technology Architecture**

The technology architecture sets the standards and guidelines for the acquisition and deployment of techno-platforms. Acquisition entails build or buy decisions and deployment entails developing technology plans to guide the evaluation of the technology infrastructure.

The technology architecture assesses the current technology base for the enterprise. The specifications and requirements laid out in the application, information, and business architectures establish the constraints for evaluating and adopting new technologies . Technology architecture evaluates mainly overall functionality , reliability ,flexibility and cost-effectiveness.

Most technology infrastructures have been the result of ad-hoc evaluation.

Technology architecture planning addresses the anticipated growth or change of an organization and mainly answers to What technologies meet the current and future needs of the enterprise and What are the skills needed to support and extend those technologies.

Constraints and standards provide direction for the evaluation of the technology infrastructure and guidelines to achieve integration and consistency with the business , application and information architectures.

## **II Business Plan**

### **2.1 Definition Of Business Plan**

Business Plan as a broad manner is a theoretical plan which tells where the business are now, where the business want to go and a map to the planner which gives the best way to get to the planned route (J.W Taylor 1986).

According to Taylor ,

A Generic Business Plan consist of seven sections which are

- Executive Summary
- Product Plan
- Sales and Marketing Plan
- Product Development Plan
- Operations Plan
- Organization Plan
- Financial Plan

### **Business Plan will**

- **Define business precisely so you will know exactly where you are now, where you want to go , and the most successful route to get you there.**
- **Direct a disciplined corporate strategy that asks all the right questions to all the right people on all right subjects.**
- **Guide you in making company objectives very specific so you can measure progress and stay on the sure track to profitable growth**
- **Enable you to create a persuasive case for your company when you need to tap outside financial resources for expansion or acquisition**
- **Open a clear communication channel with the employees so everyone is pulling in the same direction to achieve overall goals.**

## **2.2 Five Elements in Business Plan**

- **Disciplined Thinking**

The ability to make decisions is not the key issue , The key issue is the ability to make decisions about the right things. The pressure of day to day problems frequently hides just what the right things are and what should be done about them.

- **Business Definition**

Understanding where you are now, where you want to go, how you are going to get there , on what time schedule and at what price are crucial dimensions to business success. Good business plans force you to develop realistic answers to each of these questions.

- **Specific Operating Objectives**

It is easy for executives to set objectives such as “increase sales” or “ reduce costs” or “improve operations in that region”. The problem with such objectives is that there is no way to measure your progress in achieving them.

One of the well-established rules of business life is that “ If you cannot measure it , you cannot measure it.” A good business plan enables you to set careful objectives that can be measured on specified dimensions and on a specified timetable.

- **Gaining Financial Resources**

Sooner or later , every business is likely to need financial resources greater than the business can generate through its current operations. When that happens, management must look outside the business for funding.

The source could be bank credit , venture capital investment , or any other financial resource. In every case , your need for money will be competing directly with other uses of the same money. A successful business plan helps you to make the most persuasive possible case that your business deserves the financial resources you requested.

- **Communicating with Employees**

As soon as a business hires its first employee, there is a need to clearly communicate the direction that the business is taking, the methods to be used to move in that direction, the timetable that is satisfactory and the budget that is feasible .

As the organization grows larger, the need grows even faster simply because the opportunities for miscommunication multiply so quickly. A winning business plan provides the clear communication that all employees need, if they do their tasks well.

### **2.3 Business Plan As a Managerial Key In Business**

Planning has been called the secret ingredient in business success. The reason that business planning can be such powerful factor for business success will become clearer if one examines the fundamentals of every executive or manager's job. Every manager has two sets of responsibilities. One set involves managing today's business. The other set involves managing tomorrow's business.

Today's business exists because of decisions made in the past and it cannot be altered in any significant way in the immediate time frame.

On the other hand , tomorrow's business depends exclusively on decisions that are made now .Tomorrow's business can be shaped into almost anything that is desired. Now, Every manager allocate the two always scarce resources , time and money in a series of trade off.

Therefore , What a manager really does is to make a continuing series of decisions about how to devote time and money to today's business and to tomorrow's business. He or she makes a stream of choices.

## **2.4 Different Businesses, Different Business Plan**

The reason that business planning is such a powerful tool when it is done well lies in the fact that there are major differences in making decisions about today's business when compared with making decisions about tomorrow's business. Those differences are most important in two areas, **Variables and Feedback**.

The variables will be analyzed through the technology forecasting to some extent later. But before going into technology forecasting, I am going to evaluate variables in terms of managerial perspectives in the following chapter.

### **An Important entity in Business Planning, The Variables**

When a manager makes decisions about today's business, the variables that can influence the decisions are relatively well known. The customers are known and their needs are known. The products and the prices are known. Distributors and systems are in place and known. Production processes exist and are known and competitors are identified.

Moreover, when a manager makes a decision about today's business, the feedback time is quite short. The time between making the decision and finding out whether or not it was a good decision is relatively small. Therefore bad decisions can be rectified quickly and good decisions can be reinforced can be reinforced and extended quickly.

But when it comes to making decisions about tomorrow's business, everything changes. The important variables like Customers , products , services , processes to produce the products , competitors , regulations are essentially unknown .

The time frame for feedback on decisions about tomorrow's business is too long. The net result is that the factors that allow managers to use intelligent trial and error methods in managing today's business are absent then it comes to decisions about tomorrow's business.

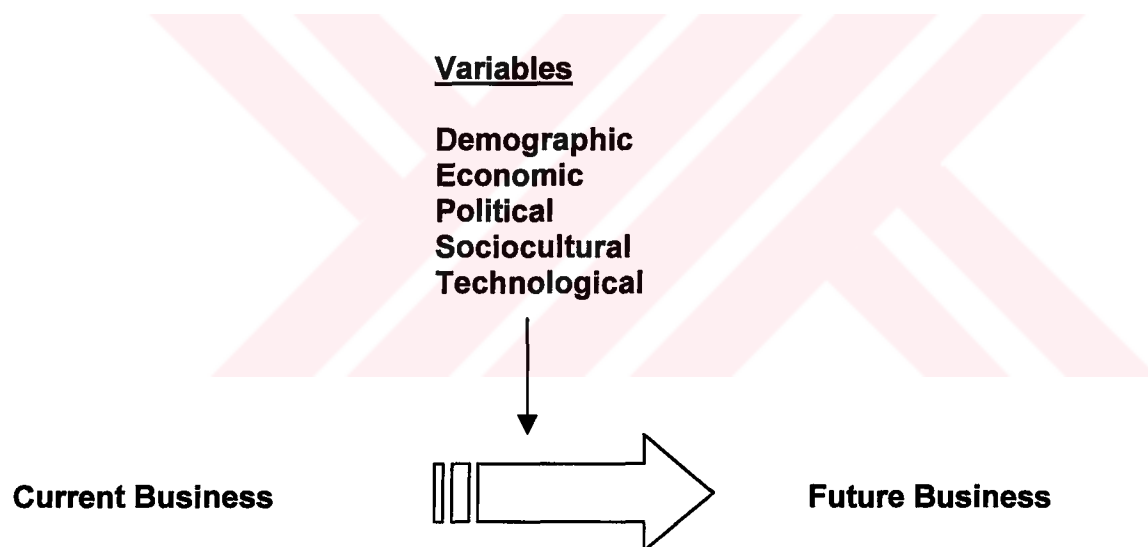


Figure 2.2.4.a , Variables in Business

## 2.5 Business Variable Analysis

“The general environment is composed of elements in the broader society that Can influence an industry and the firms within it. These elements are grouped into environmental segments called the demographic,economic,political, sociocultural and technological segments” (M. Hitt , R. Ireland , R. Hoskisson )

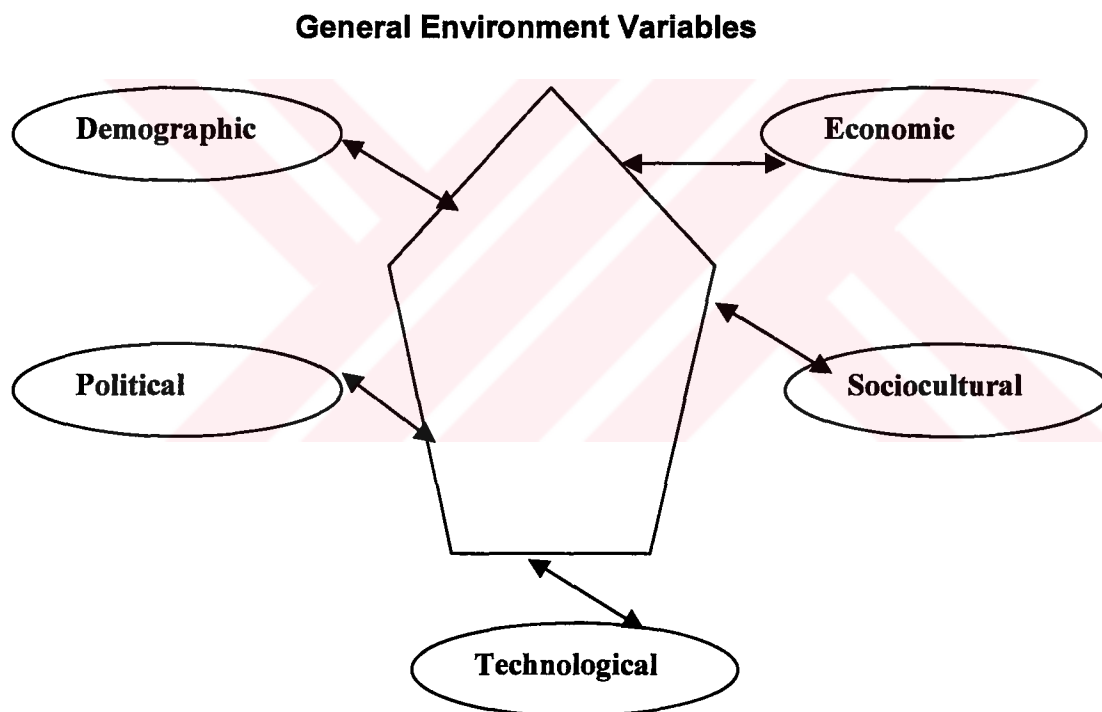


Figure 2.5.a The external environment

## **The General Environment Variables: Segments and Elements**

### **Demographic Segment**

- **Population Size**
- **Age Structure**
- **Geographic Distribution**
- **Income Distribution**

### **Economic Segments**

- **Inflation and Interest Rates**
- **Gross Domestic product**

### **Political/Legal Segments**

- **Anti Trust laws**
- **Taxation laws**
- **Educational policies**

### **Sociocultural Segment**

- **Shifts in preferences regarding product and service characteristics**
- **Shifts in work and career preferences**

### **Technological Segment**

- **Product innovations**
- **Process innovations**
- **New communication technologies**
- **Applications of knowledge**

## 2.6 The Mobile Commerce

There is no precise and specific definition for mobile commerce or mobile e-commerce. Every analyst, tech-magazine writers appears to have a different definition of the term. In fact, there appears to be a consensus now on the meaning of its big brother "e-commerce or e-business" which came first. Therefore, This technology transforms the mobile phone device into a mobile wallet.

The GSM-WORLD Association which holds the 450 Mobile Operator defines mobile commerce as "Mobile Commerce is simply The effective delivery of electronic commerce into the consumer's hand, anywhere, using wireless technology" (Gsm-world Associations, [http://www.gsmworld.com/technology/mobile\\_commerce.html](http://www.gsmworld.com/technology/mobile_commerce.html)).

On the Other Hand, J.P Morgan uses simpler definition as "business-to-consumer transactions conducted from a mobile device." (J.P. Morgan). According to South-Carolina University Academic Research , "Mobile commerce (m-commerce) is any transaction with a monetary value that is conducted via a mobile telecommunications network". ( <http://dmsweb.badm.sc.edu/mgsc890/M-commerce/Introduction.htm> )

Typical examples of m-commerce are :

- Purchasing Car-Parking tickets
- Purchasing movie tickets

- Restaurant booking and reservation
- Hotel booking and reservation

### **Difference Between M-Commerce and E-Commerce**

A misleading idea about m-commerce is that m-commerce is subset of all e-commerce, therefore implying that any e-commerce site could and should be made available from a wireless device. However, M-commerce should be recognized as a unique business opportunity with its own unique characteristics and functions, not just an extension of an organization's Internet-based e-commerce channel. Although there are similarities between e-commerce and m-commerce from being able to purchase a product or service in a virtual environment , m-commerce is a unique business opportunity in the world. ([www.mobileinfo.com](http://www.mobileinfo.com))

### **Characteristics of Wireless Technology**

**Availability:** The use of wireless device enables the user to receive information and conduct transactions anywhere, at anytime.

**Accessibility:** Mobile device enables the user to be contacted at virtually at anytime and in every place. The user also has the choice to limit their accessibility to particular persons or times.

**Convenience:** The portability of the wireless device and its functions from storing data to access to information or persons.

**Localization:** The emergence of location-specific based applications will enable the user to receive relevant information on which to act.

**Personalization:** The combination of localization and personalization will create a new channel/business opportunity for reaching and attracting customers.

Personalization will take the form of customized information, meeting the users' preferences, followed by payment mechanisms that allow for personal information to be stored, eliminating the need to enter credit card information for each transaction.

Time Sensitivity – Access to real-time information such as a stock quote that can be acted upon immediately or a sale at a local boutique.

The unique features of the mobile device such as its compactness for convenience and personalized functions; subsequently, people have become quite attached to their devices.

### **Driving and Limiting Factors Behind M-Commerce**

Basic Driving factors are

- Exponential growth of consumer interest and adoption of the Internet and e-commerce.
- Tremendous growth in mobile telephony.

- Development of real-time transfer of data over <sup>1</sup> 2.5G and 3G networks will enable faster data transmission and 'always-on' connectivity.
- The evolution of the handheld devices incorporating <sup>2</sup>WAP and now <sup>3</sup>GPRS.
- Mobile e—commerce market is<sup>4</sup> worth \$3.5 billion in 2000 and will grow to Over \$200 billion by 2005 (Ovum).
- Cost of entry into mobile e-commerce is low for most entrants; for Example, a bank can Implement a sophisticated m-banking solution in under six months for around \$1 million.
- The unique features of the mobile device such as its compactness for Convenience and personalized functions; subsequently, people have become quite attached to their devices

On the other hand because of the lack of standards and physical device Constraints, there are some limiting factors which diminish the popularity.

These Are

- Weak processors:
- Limited memory
- Tiny screens, poor resolutions
- Poor data entry

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<sup>1</sup> 2.5G and 3G is the name of standard in telecommunication , G for Generation .3G refers to video broadcasting capability , 2.5G refers to voice transmission and a low level data transmission with mobile phones.

<sup>2</sup> WAP , Wireless Application Protocol : A set of standards in mobile telecommunication.

<sup>3</sup> GPRS , General Packet Radio Switch : New standard for data broadcasting for mobile phones.

- Even though efforts have already been commenced to standardize the Operating environment, especially in North America, where standardization is Most lacking.
- WAP: While WAP has been a very important in the evolution of the Wireless Internet and in turn m-commerce, there are problems/difficulties with the standard, such as the lack of WAP-enabled devices and security issues.

### **Moving from 2G (Second Generation) to 2.5G and 3G networks**

Before Going through the network generations, I will shortly explain the Generations in Mobile Community by means of data speed. According to Analyst reports indicate, in the near future mobile Operators will get their revenues more and more from the data services like internet connectivity via mobile phone and fax services. The operators technical infrastructure which supports a data speed up to 14.4 kbps is using 2G , Second Generation Networks. With the development in telecommunication technology, A new high speed technology called GPRS has been integrated onto the current 2G networks , these Integrated networks are 2.5 G networks and has a faster data speeds. This generation is better suited for Internet applications.

On the Other Hand, 3G Networks Support high-speed applications up to 144 kbps while in motion and 2 mbps while stationary, Provides increase in network capacity through new spectrum, most importantly Allows subscribers to access their services while roaming.

### Products, Services and Applications for M-Commerce

According to a research conducted by Ovum, the basic criteria for m-commerce products are

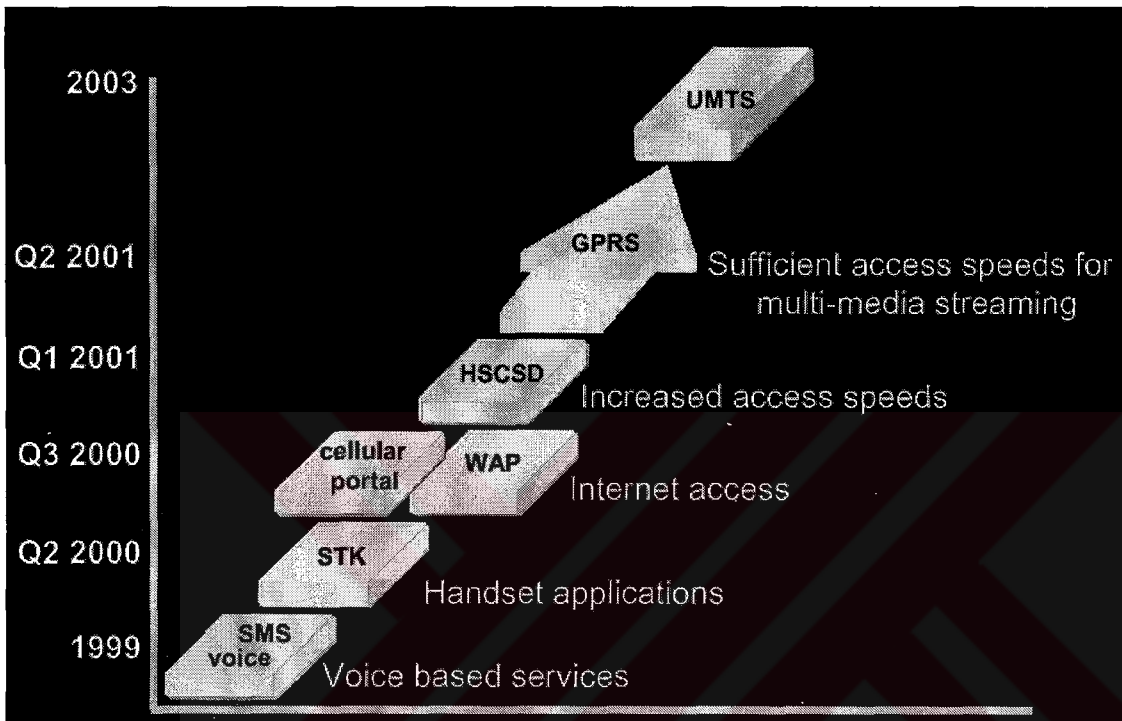
- Limited choice
- Predictable availability
- Does not require lengthy and in-depth decision making (appeal to impulsive buying behavior)
- Convenience

According to Ovum's research, there is a lot of uncertainty about which mobile commerce applications will be successful and make money. The research/consulting firm classified m-commerce applications into three categories which is seen in the *Figure 2.2.6.a Goods , Services offered by business*

|                      | Goods                          | Services  | Information                                |
|----------------------|--------------------------------|---|--|
| Business-to-consumer | Shopping<br>Vending<br>Trading | Gaming & gambling   | Paid-for<br>Information<br><br>Advertising |
| Business-to-business | Procurement<br>Trading         | Ticketing<br><br>E-cash<br><br>Banking<br><br>Discounts & loyalty schemes |  |

Source: Ovum (MECA)

Figure 2.2.6.a Goods , Services offered by business



Source : Orange Mobile, <http://investors.orange.co.il/Presentations/files/IR%20January.pdf>

Figure 2.2.6.b Future Directions Of Mobile Technology

### III GAP ANALYSIS BETWEEN INFORMATION AND BUSINESS PLAN

#### 3.1 Definition Of the Gap Between Business and Information

Business requirements as being the driving force on information requirements is always one step further than the business user requirements. After a business created in order to generate benefit , the information requirements of this business is demanded , during this supply demand period an incomplete status is called as Gap. In the following matrix , I have diagrammed this balance or demand-supply relation by using a matrix structure.

|                          |                        |             |                |
|--------------------------|------------------------|-------------|----------------|
|                          | <b>IT Requirements</b> | <b>FULL</b> | <b>PARTIAL</b> |
| <b>USER Requirements</b> |                        |             |                |
| <b>FULL</b>              |                        | <b>OK.</b>  | <b>GAP</b>     |
| <b>PARTIAL</b>           |                        | <b>GAP</b>  | <b>OK.</b>     |

Table 3.1 Gap Matrix

### 3.1.2 A Model Of The Strategic Decision Making

#### Gap Analysis, Dyson Approach

The gap between the user requirements and Information Technology Requirements has already been analyzed by academicians and tried to be modulated. One of them is Robert G. Dyson. Dyson's conceptual gap model or framework is inspired from the idea of a simple control system as shown in Figure 2.3.2.a.

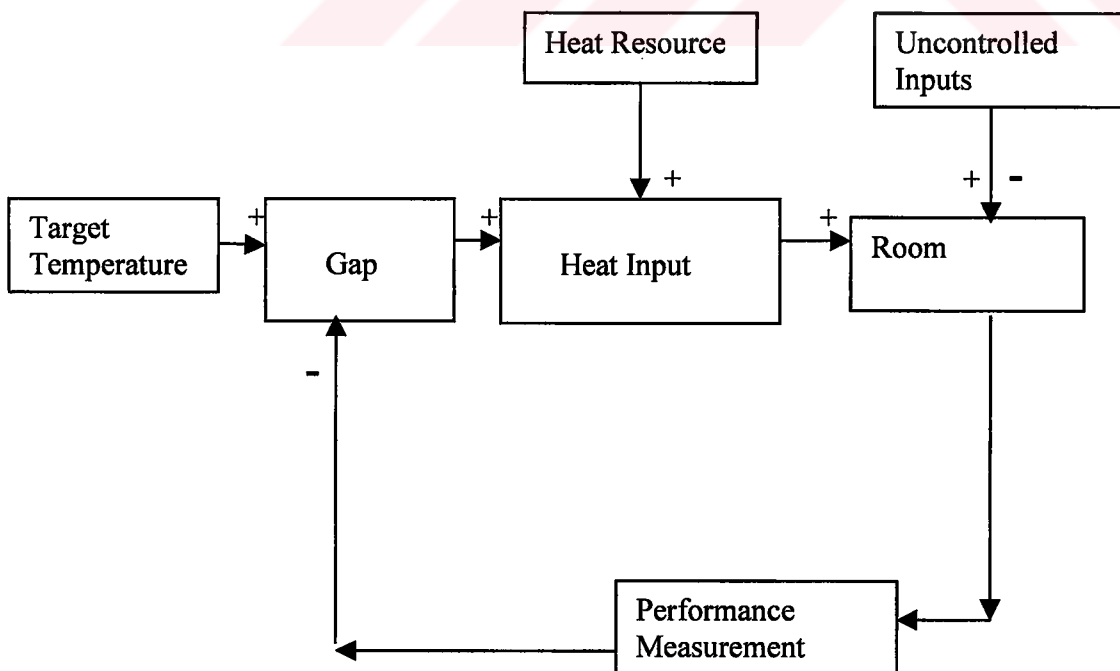


Figure 3.2: **A simple Control system**

According to Dyson "The organization requires a set of objectives against which the current performance can be compared through the procedure of gap analysis. If the gap is too great strategic options are formulated and appropriate ones selected. These must then be implemented thus affecting the state of organization. The implications of this model would be that only the current performance of the system is assessed, and if this is not satisfactory when compared to the current objectives then a strategic decision is taken."

This model of decision-making is inadequate because strategic decisions take time to affect the performance of an organization and by then a commercial organization may have gone.

Because of this time lag, and the potential severe consequences of deviating from the objectives, a reactive strategic decision making process is inadequate. Thus a strategic decision making process should measure not just the present performance, but also must predict possible future performances and take anticipatory action therefore It must be pro-active.

A pro-active strategic decision making process involves predicting possible future states of the organization, assessing the acceptability of these, formulating strategic options, and evaluating them through feasibility studies and an assessment of their impact on the future states of the organization. In short a strategic planning process is required.

Figure 2.3.2.b elaborates figure 2.3.2.a to accommodate strategic planning.

The model also includes a forward loop, which involves strategic option formulation, feasibility study, resource assessment, a system model for predicting future states of the organization, and assessment of the uncontrolled inputs. The output from this forward loop, the prediction of future states of the organization, is also fed back and compared with objectives, which of course must be objectives for the future.

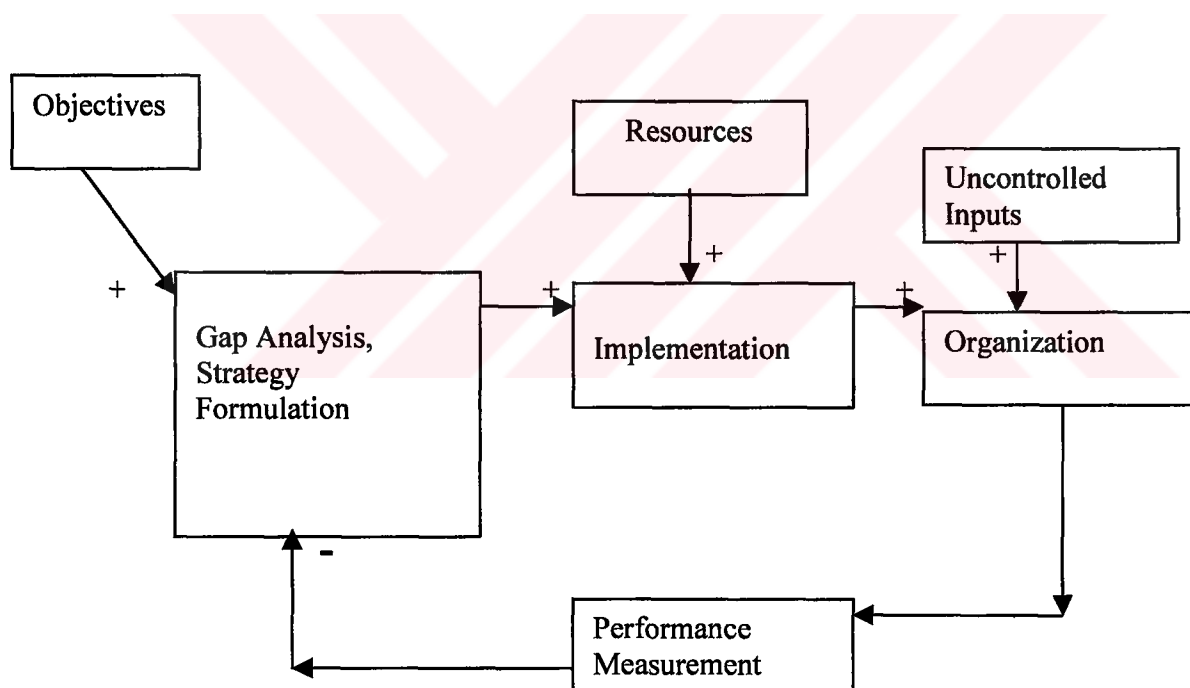


Figure 2.3.2.b : Reactive Strategic decision making process

## **3.2 Information Integration Theory**

### **3.2.1 Theoretical Approach to Information Integration**

"An information and decision theoretic model of integration, which identifies information requirements for the major manufacturing functions, answers some critical questions. Such a model is developed using a paradigm of parallel formulation". (Prof.Cheng Su )

The model unites previous results in several major disciplines to uncover basic tasks, logical interactions, and required data and knowledge classes.

The new model guides

- A new critical review of existing process planning,
- Production planning

This review reveals the highly interdependent nature of the tasks whose consolidation characterizes integration and uncovers information requirements expressed or implied by the unit tasks in these domains. Based on an analysis of the logic and the information flows among the unit tasks, a model using parallel

reformulation is prescribed to consolidate interdependency, effect a global decision space, and reduce uncertainty for integrated manufacturing planning and control. The characterizing information requirements of the model are determined accordingly.

These results are unified into a theory comprised of definitions, assertions and arguments. The definitions and some of the assertions are derived from existing production, organization, and information theory and from the analyses in the thesis; some assertions are built up from other assertions and specify the nature of integration; and requirements for information classes and knowledge classes are given as assertions.

Finally, information requirements derived from the theory are expressed formally using the Two-Stage Entity Relationship methodology to provide a reference model for applications.

**This model should include the tasks, interactions, data classes, and knowledge classes required for achieving integration in practice.**

By using a formal representation method to develop the information requirements model, the resulting reference model serves as a starting point for enterprise-specific information modeling projects. The reference model can also be used to evaluate the extent to which other models satisfy the information requirements for integrated planning and control.<http://viu.eng.rpi.edu/ref.html> ,

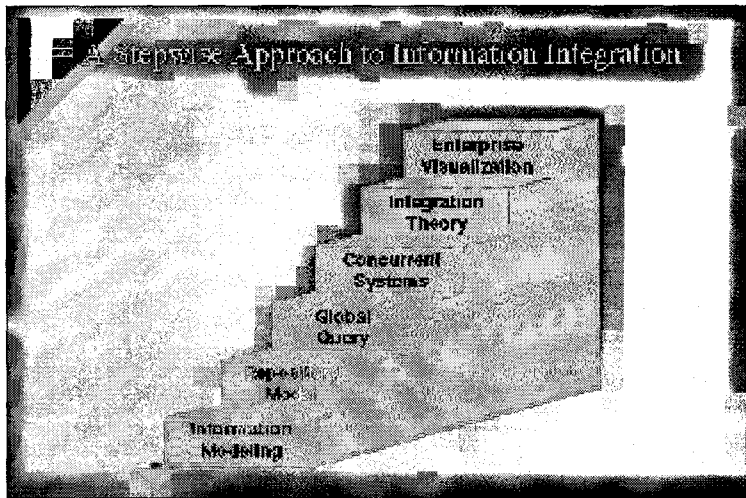


Figure 3.2.1.a A stepwise approach to information integration

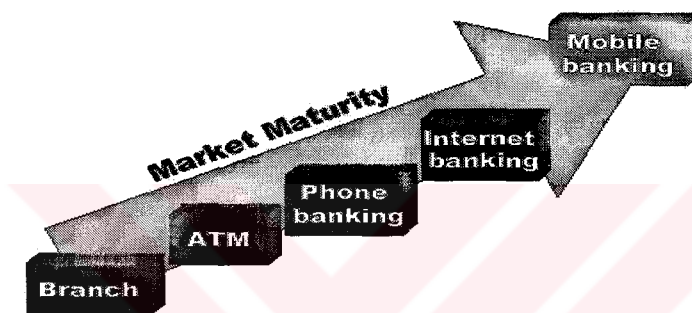
## **IV MOBILE BANKING**

### **4.1 Rapidly Changing Banking Environment**

This document describes the business context in which Banks are in at present. Today, banks are faced with deep economic recession and increasing operational costs. In the past, competitive edge was achieved by offering the highest level of banking and financial services to the customer when he was visiting the branch. Nowadays, banks need to offer the same level of services but through new distribution channels like **ATM, fixed telephone and Internet**. The new constraints that banks are faced with accelerate the need to launch innovative services in the best timeframe, with the flexibility to change these services over time. Banks need to lower their services distribution costs and access more consumers and they can do this only with on-line solutions. Most of the time, they mainly concentrate on Internet technology (building a Web site dedicated to banking services) and are not aware about the possibilities of wireless technology.

Today, a new media appears clearly: the mobile phone. In some Asian countries (Malaysia), the penetration rate has reached one third of the population and shows a high potential of development. More and more network operators are playing an important role in this wireless economy and have the right structure and marketing weapons to provide an increasing number of people with value added services. In this new environment, mobile banking services bring the

highest level of content and added value to mobile users. In a near future, many banks will use this new channel to improve their level of service toward the customer in offering smart banking services which are accessible at anytime, anywhere.



**Figure 4.1:** *Banking channels trend*

Mobile banking is a way of providing banking services to customers wherever they are. Banking services vary between requests for information such as bank account statements, advice on loans, stock exchange values, currency rates etc., and financial transactions over the phone (transferring funds from one account to another, opening bank accounts and much more).

Using the Wireless media would give access to a large population with high consuming potential, and allow to better target customers through direct marketing. Wireless media would also give a good way to advertise services for the right customer segment, in the right area at the right time. The concept of

mobile banking is not new. It has been thought of since the 70s, where cellular systems started to explode in the US. At that time, banks started looking at mobile users with interest as they were very much in the higher income category. But, mobile banking never came as a habit, as analog cellular systems were very much opened to fraud and, privacy issues were too much of a risk. It is only recently by introducing the SIM card that GSM network operators brought security in voice encryption and subscription fraud. Today, one of the most advanced markets for mobile banking is the UK. Mobile banking development was mainly driven by one network operator (Cellnet) and one major bank (Barclays). This was the world's first mobile banking application launched in April 97.

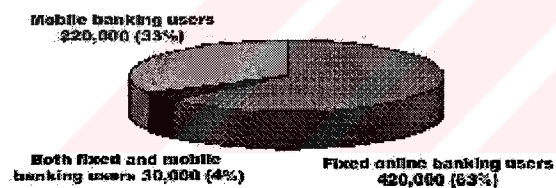


Figure 4.2: Mobile Banking Usage vs. Fixed Online banking users in UK in 1997

#### 4.1.a Relationship banking

Retaining customers is becoming more important for banks than getting them. In the past years, banks mostly viewed their branches as support for their corporate business. Then, personal banking has become the key subject in order to

differentiate themselves from their competitors. It is crucial for a bank to track profitability on each customer much more closely. A leading credit card services company determined that retaining 5% more of its customers boost profits 60% by the 5th year. This company has designed its entire business around customer loyalty. To achieve this objective, it is essential to start to construct the concept of the lifetime value of the customers. If a bank is able to motivate all its existing customers to buy one more product, it is much more profitable than getting new customers. In the personal banking channels, mobile phone is definitely a strategic channel due to the fact it is becoming a personal object every body carry in its pocket and it offers through the <sup>5</sup>SIM Card the highest level of security for banking applications. The ultimate goal for a bank can be that whenever a customer thinks of anything to do with financial services, he will think of the bank and use his personal banking mobile phone.

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<sup>5</sup> SIM, Subscribers Identity Module

## 4.2 Mobile Banking Business Case

Mobile banking is a highly cost-effective deliver channel compared to traditional alternatives like PC, <sup>6</sup>IVR and Telephone Banking. According to many consulting firms, the introduction of wireless delivery of banking services has the potential to reduce significantly operating costs for the bank.

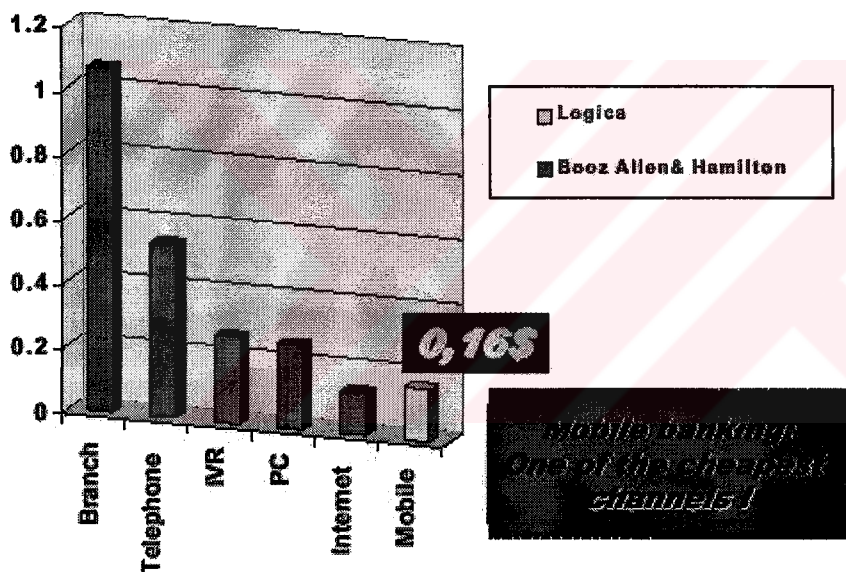


Figure 2.5.2.1 : Delivery channels costs comparison (banking transaction)

<sup>6</sup> IVR, Intelligent Voice Recognition

#### **4.2.a Banks/Network Operators: a common interest to go to mobile banking Operators needs**

Mobile Operators' basic needs are to increase market share, reduce costs and build customer loyalty, but these are achieved with the following marketing strategies:

. **Differentiation of marketing mixes** by offering new services to subscribers.

With increasing competition, differentiation has become the key strategy to increase market shares. Such value added services range from an automatic emergency number dialing to voice mail services, mobile banking and even purchasing goods and services via the mobile handset.

. **Churn Reduction** and keeping customers loyal to a brand of network.

Today network operators are fighting against churn (the share of disloyal customers), which means a loss of business in a highly competitive environment. For example in Europe and Asia, there is more than one network operator per country, customers have a habit of switching network brands depending on the network's coverage and promotions.

. **Air traffic usage increase:** before the generalization of mobile phones, corporate clients were the most cost effective customers making unlimited calls at peak hours. Today, with the increasing share of general public subscriptions.

Operators need to offer low prices to avoid high churn rate, consequently, phone bills are decreasing.

**Development of tailored services for cost effective market segments:**

it costs up to 10 times less to retain existing customers than it costs to retrieve new ones. With this in mind, developing new services for the most cost effective market segments turns out to be profitable for operators. For example, bespoke services for businessmen, such as stock exchange monitoring, taxi reservation services, business news..., are all services that keep customers captive, on-line, spending more with their mobile phone. One could even imagine on-line horoscopes for subscribers, bookmaker activities, travel and entertainment services and much more.

**<sup>7</sup>Handset interoperability:**

So as to launch the same service without continuous custom developments, network operators need to have at their disposal an industry standard where the mobile handset's specifications do not interfere with the services launched by the network. It seems quite clear that offering more services is the best solution for operators to make their existing customer base loyal.

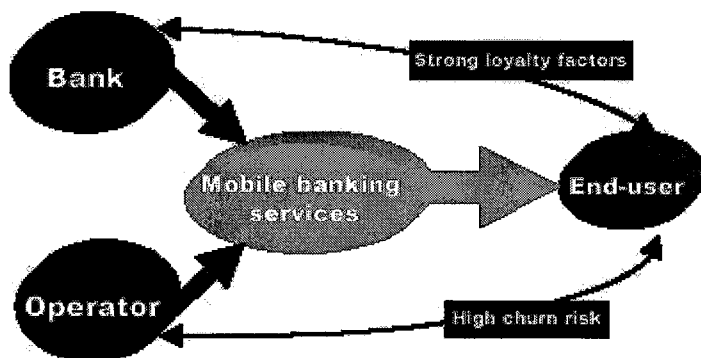
## **Operator/Bank convergence**

Mobile operators represent real potential partners for banks who want to extend their channels. On their side, network operators will be very interesting in partnering with a bank for many reasons:

Banks have very strong loyalty factors with their customers. Most of the time, people are loyal to their bank, they will not change from one bank to another every 6 months or every year. This is not the case for the mobile operators because they are facing with fierce competition and the churn rate reaches in many countries 25/30%. Bringing mobile banking services in the phone is a mean for operators to reduce drastically churn rate. In the UK, Cellnet through its partnership with Barclaycard have reduced its churn rate from 25/30% to 8%.

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<sup>7</sup> Handset, Mobile Phone



**Figure 5: Affinity organization scheme**

An alliance with a major bank would represent for operators a clear differentiation factor and a mean to boost airtime in providing end-users with services they could use on a daily/weekly basis.

Banks have very strong marketing skills to target efficiently the right end-users with the right services. The bank “know-how” on their customers is one of their best assets due to extensive database system management. In order to secure bad debtors, a cross-analysis on customers can bring very important information. The 80/20 rule apply for both banks and operators (20% of their customers generate 80% of the business). In order to catch or retain these high value customers, both will need strong differentiation factors.

It is crucial for banks to improve the waiting times for their customers: IVR should not be the only way for getting account information and account transfer. GSM technology brings a very high level of interactivity between the user and the bank server.

| <b>Operator name</b> | <b>Subscribers (98)</b> | <b>Subscribers (99)</b> | <b>Subscribers (2002)</b> |
|----------------------|-------------------------|-------------------------|---------------------------|
| Turkcell             | 2 000 000               | 3 500 000               | 12 000 000                |
| TelSim               | 1 050 000               | 2 250 000               | 5 000 000                 |
| Aria                 |                         |                         | 800 000                   |
| <b>Total</b>         | <b>3 050 000</b>        | <b>5 750 000</b>        | <b>17 500 000</b>         |

#### 4.2.a.1 Mobile operators in Turkey (GSM subscriber base)



#### 4.2.b Mobile Banking benefits

Mobile banking enables customers to have access to different types of banking services and information from anywhere in the world, 24 hours a day, 7 days a week.

| <b>Information</b>  | <b>Transaction</b>                                     |
|---|--|
| Financial information<br>On the Stock exchange            | Open A Bank Account                                    |
| Investment And Economic Forecasts                         | Transfer funds from one account to Another             |
| Information on Currency rates                             | Transfer funds between financial Institutions          |
| Access to different accounts:<br>Current account, savings | Pay invoices, Write online checks<br>Manage Portfolios |
| Latest transactions on bank accounts                      | Manage International funds transfers                   |
| Advice On loans   | Subscribe to or manage life or health                  |

**Table 4.2.b Mobile Banking functionalities**

### **Ergonomics**

With mobile banking, financial services become instantly accessible in the form of menus on the handset, providing user total freedom of use (“Use anytime, Anywhere”) as well as privacy (“in complete security”).

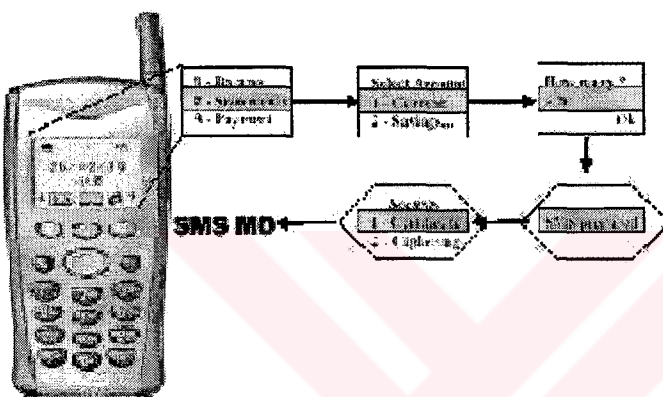


Figure 4.2.b.1 Ergonomics Of Mobile Banking

### **Mobility**

The world becomes global, so does our life. In an ever fast pace of life, people are constantly on the move. Hence, time becomes very important and valuable. Banking from home, from the car or waiting for the next plane becomes a key service for many people. This is only possible through mobile banking.

***Roaming***

Without mobile banking, most financial services remain national and have difficulty to adapt to an ever more traveling population. The world sees its national frontiers fading and people too. With traditional banking, access to most banking services is reserved to the national ATM network or in the vicinity of branches. With mobile banking and international roaming, it is possible to check bank information, transfer funds, etc. with ease. It is also possible for the user to see whether he have enough fund for shopping, investing, etc. in real time.

***Broadcast of information***

With mobile banking, banks can broadcast any information they find necessary or useful to the account holders. They can also broadcast special promotions, advertisements and so on at any time in real time.

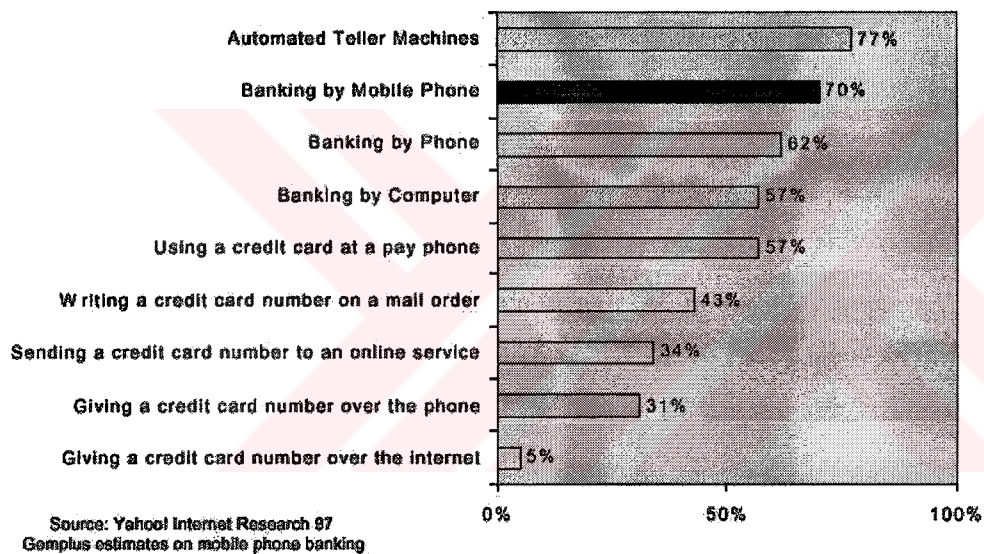
***Customer loyalty***

With mobile banking, banks can now provide much better services since their account holders can have the flexibility and convenience of interacting “on line”. No more hustle is required for account holders to go to ATMs or Banks for transactions that can be otherwise performed over the air. This will improve security and privacy of account holders. Indeed, Mobile Banking retains customer loyalty.

**Mobile banking user acceptance**

Mobile banking services will be clearly well received for many reasons:

- People perceived the GSM mobile phones as secured devices because of the presence of smart cards inside and of the privacy given by the GSM technology. The graph here below shows clearly the end-user trust for banking on a PC/Internet environment is less strong and natural than banking on a phone or on a mobile phone.



*Figure 7: PC users trust*

## **4.3 SIM cards: Perfect mobile banking tools**

### **4.3.1 Why put mobile banking services in the SIM?**

There are many reasons for this, the most important being that the SIM card belongs to the operator: the card is defined and customized by the operator making it the only link between network services and the end user. In addition, with remote management tools the card can be controlled remotely at any time. Operators and Bank partners keep total control of the applications, when they are to be downloaded and when they should be removed. The card is secure: in the value added service context, there is a strong need to control and certify applications that are inserted and extracted from the SIM. For example, the operator must be able to control what applications are being downloaded into the card and whether they are certified or not. This operation must be sure that the execution process in itself is fully secure. Today, only the Smart Card can guarantee this.

#### ***Security***

The smart card has been chosen to store mobile banking applications because it is the most secure solution for bankers and GSM operators. The SIM card can store and compute digital signatures that ensure authentication, non repudiation,

confidentiality and reliability of transactions. In addition, the SIM card stores the application's sequences to access banking services. Account numbers, PIN codes, stock codes and other information can be keyed-in at convenience and sent to the bank in a ciphered mode which ensure confidentiality of the transactions. The SIM card plays a key role, providing Active protection (authentication, certification, encryption) and passive protection (Information access via secret code). Non-repudiation of transactions is also achieved (the user cannot refuse to admit or repute data that he sent) thanks to digital signatures.

The SIM card can help to convince consumers that mobile banking is not a threat to the confidentiality of their transactions, and that their money cannot be stolen in cyberspace.

### ***Marketing tool***

The high degree of personalization possible through smart cards can be extremely valuable to any bank that is trying to keep existing customers. SIM cards provide a mechanism for "one to one" marketing: more and more SIM cards will be able to support many applications (loyalty, e-purse).

### **4.3.2 SIM Application Tool Kit**

Installed on the handset by the SIM. It is therefore possible to issue the GSM service Bearing in mind that Value Added Services help operators reduce churn and increase air-time, the telecom players have introduced an industry standard that enables a standardization of the way all value added services are used.SIM

Toolkit is the result of the SMG9's work on the role of the smart card in the mobile handset. In 1995, the first ideas and draft documents were specified, resulting in 1996 with the standardization of

SIM application Toolkit as an ETSI (European Telecommunications Standard Institute) standard: GSM 11.14.

With the development of SIM Tool Kit the SIM can indeed be programmed with an application that can be heard/seen on the phone. In the part 1.2.2.b, a clear example of the user benefits provided by the SIM Tool Kit in term of mobile phone ergonomics is shown. Applications can be entirely defined by the operator and additional Menus together with Operator Specific Menus such as Mobile Banking (to connect to your bank account) or info-on-demand (enables connection to content providers through an easy to browse list of info types). SIM Toolkit is a necessary layer to install Value Added Services on top of bearer services (call, receive calls, send messages).

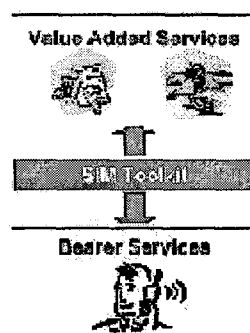


Figure 4.3 Value Added Services

### 4.3.3 Over-The-Air Management

Over-The-Air (OTA) is way to manage directly over the GSM network, the content of the SIM card. It promises a whole new range of applications, for example:

- Provide SIM card remote maintenance: activation, subscription parameter updates.
- Activate new services: SIM Toolkit menu access, service-access parameter.
  - Manage personal information: download
  - Fleet management: remotely update corporate data (FDN, professional subscriptions).
  - Enable new services: reload electronic money or e-purses, manage remote
  - banking services,

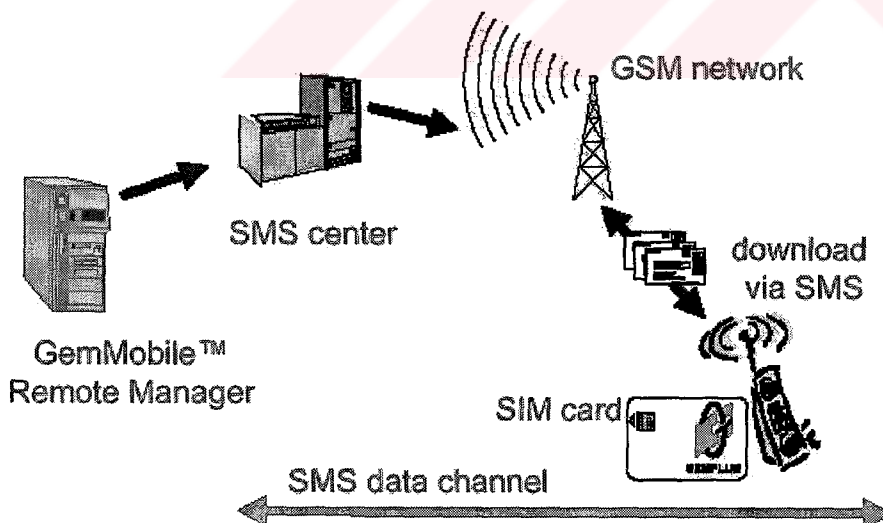


Figure 4.-4 Remote Management (OVER THE AIR)

## **V. RESEARCH DESIGN AND METHODOLOGY**

This chapter covers research purpose, research design, and method of Data collection, data collection instruments, and variables used in the Sampling method used. A Structured e-interview by email has been conducted with 100 Mobile phone users. The conducted interview on this Customer Sample group, categorized as “techno innovators” by GSM companies marketing specialists reflects the expectation and needs of the customers which are willing to use mobile banking product. Another interview has been conducted with mid-level managers in bank and gsm operator company.

### **5.1 Research Purpose**

The main objective of this study is to build an integrated model for mobile banking which integrates information system plan into business plan. In order to meet this objective a structured e-interview by email has been conducted with 100 Mobile phone users. The conducted interview on this Customer Sample group, categorized as “techno innovators” by GSM companies marketing specialists reflects the expectation and needs of the customers, which are willing to use mobile banking product. A Critical Success Factor Analysis has been executed with mid-level managers through the interviews in order to extract the managers perspectives which will be used for implementing an efficient integrated model.

## **5.2 Research Design**

A structured interview by email is conducted with one-hundred mobile phone owners. These Mobile phone owners are categorized as techno-innovators customers group. (See Appendix 1).

A Critical Success Factor Analysis has been done through the interviews with mid-level managers in bank and Gsm Company. (See Appendix 2).

In addition to above researches, The Expert Opinion have been evaluated about mobile banking distribution channel after an interview was executed with Ahmet Cakaloz, the former Assistant General Manager Of Bank Express.

## **5.3 Method Of Data Collection**

The data for this study is collected through the structured e-interviews , interviews with mid-level managers in banks and mobile operator company, and interview with a banking guru.

## **5.4 Data Collection Instrument**

The main method of data collection is a structured questionnaire applied to 124 innovative mobile phone users , a structured questionnaire applied to mid-level managers and an interview with a banking guru is the last data collection part.

The structured interview with 124 innovative mobile phone users composed of two parts . The first part contains questions about the behaviors of this customer group on using the banking transactions.

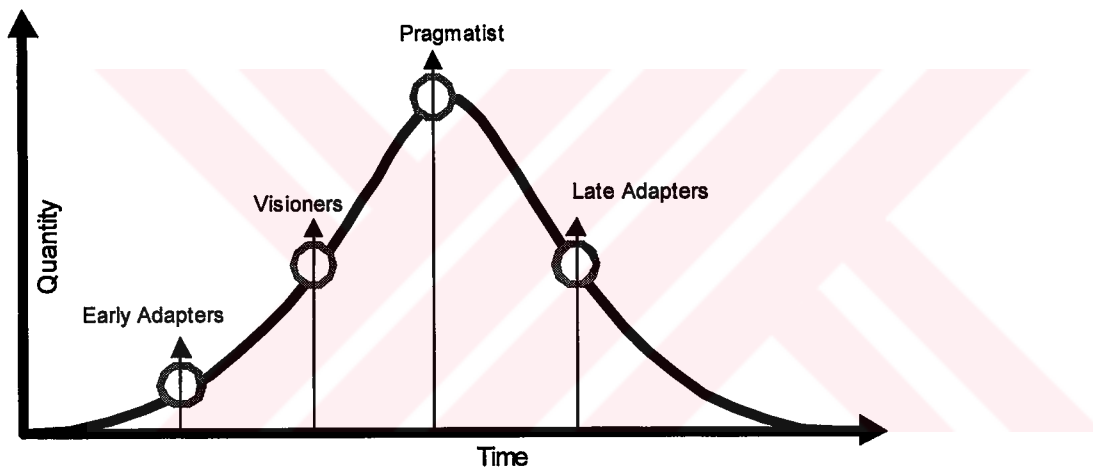
The second part is designed in order to understand which banking transactions are more probable to be done via mobile phones by this innovative customer group. Second Interview was done with Mid-level managers in order to define critically success factors of this banking product.

This interview contains open-ended questions in order to get the strategies of mid-level managers.

The last interview is with a banking guru who knows the banking for years and has a wide vision on new banking distribution channels. This interview is also designed in unstructured format. Questions about the banking trends and future strategies has been gathered.

## **5.5 The Sampling Method Used**

I conducted e-interview on one hundred innovative mobile phone users who are specially selected by gsm operators marketing division. Innovative users in other words Early Adapters according to the figure 5.3 The selected sample's adaptation process that is referenced from the following figure 5.3 is the key for the rest of the mobile phone user segments.



Source : Microsoft

Figure 5.1 , Adaptation Process Of High Tech Products ,Microsoft 1999

## VI RESEARCH FINDINGS

The research is a qualitative research and therefore, quantitative analysis is not used for the research findings. Three Approaches have been used in order to come to a conclusion Structured Interview has been conducted with Mid-Level Managers working in banking and GSM sector. The main questions asked to Mid-level managers were, what is critically important to you in Mobile Banking product ?,How attractive mobile banking will be by means of handset screens? , What is the effect of network coverage to the usage of this product? , Are banks ready for the security ? After these questions , Managers concluded on What is Critical to us in order to launch this product successfully by responding the questions and generating synergy with each other. After that I extracted the Critical Success Factors Of Managers and listed them under the heading of Critical Success Factors Of Mid-Level Managers. After that I conducted an e-interview, which has been interviewed with 125 mobile phone owners electronically by mail, 22 of them did not respond to questions. Therefore the total number of conducted interviewers is 103 persons. The questions asked to this phone owners which is listed in appendix part page 95 is to understand the expectations of current mobile phone owners and to estimate potential usage of this product. The Selected Sample group who are classified as Early Adapters in figure 5.5, pages 85 expect to find a fast and secure service from mobile banking service. They

expect to process banking transactions independent of time constraint, as cheap as Internet banking. Moreover, they want to see a robust infrastructure for the effectiveness of service. Finally, they want to get an effective product management service, which evaluates the feedback of customers.

Finally, An interview has been conducted with the banking guru Former Assistant General manager Ahmet Çakalöz . This challenging part of the study has been made in the head office of Bank Express. The main question was What executives expects from this new banking product which will decrease the operational costs? . Moreover, Mobile banking usage estimation has been asked to banking expert. During this unstructured interview an important item appeared. It was the issue of Migration Of Customers From One Banking Channel to a new banking channel. Expert's opinion was that mobile banking channel will be used by techno-fun young groups firstly . On the other hand , he indicated that this number as expected is not high and migration of this customers from old banking services to this new service will be very low compared to total customers and service.

## **6.1 Critical Success Factors Of Managers**

I have listed the Critical Success Factors Of Mid-Level Managers as the aggregated critical success factors like in the figure 1.2 Page 22. The Aggregated Individual Critical Success Factors For the Mobile Banking are,

**Aggregate 1 :** Churn has to be reduced and customers has to be kept loyal to the brand of network by promoting the service and enlarging the network's coverage

**Aggregate 2 :** The one of the cheapest distribution channel for banking has to give A User-Friendly interface for Customers and A Secure and Solid Application has to be implemented.

**Aggregate 3 :** Development Of tailored services for cost effective market segments has to be done by designing new services on the phone and by giving interoperable service.

## **6.2 Early Adapters' Needs From the Mobile Banking**

Early Adapters expect to find a fast and secure service from mobile banking service. They expect to process banking transactions independent of time constraint , as cheap as internet banking. Moreover , they want to see a robust infrastructure for the effectiveness of service . Finally , they want to get an effective product management service which evaluates the feedback of the customers.

### **6.3 Migration of Customers From Former Banking**

#### **Distribution Channel to Mobile Banking.**

This finding has been gathered after interview has been conducted with banking guru Former Assistant General manager Ahmet Çakalöz.

After mobile banking has been launched into the market , the important issue is to define what percentage amount of current bank customers will use the new offered service. Expert's opinion is that mobile banking channel will be used by techno-fun young groups firstly . On the other hand , he indicates that this number as expected is not high and migration of this customers from old banking services to this new service will be very low compared to total customers and service.

## **VII INTEGRATION OF INFORMATION SYSTEM PLANNING INTO BUSINESS PLANNING: AN INTEGRATED MODEL**

This chapter covers the model and its elements, which is developed according to research findings.

In this Part, The proposed model will be explained as being the outcome of the analysis and conducted interviews. The Proposed Model consists of two parts First is Integrated Information Model and second is Tailored Business Plan.

### **7.1 THE INTEGRATED INFORMATION MODEL**

Information System Plan in Mobile Banking should support the information flow based on the planned business scenarios, enhance services and facilitate productive systems and most importantly build the product's infrastructure.

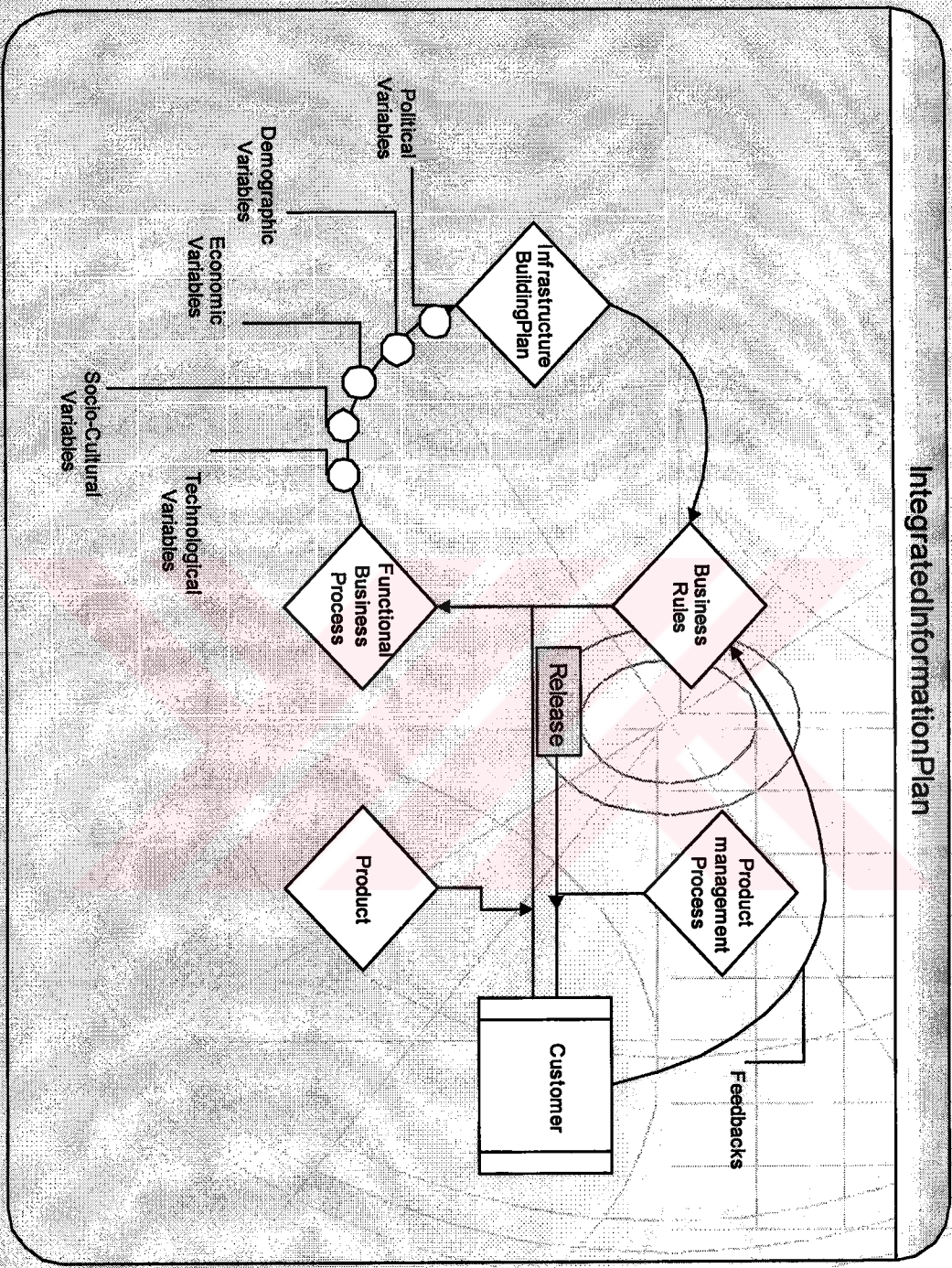
Commercial Bank and GSM operator provide user-friendly, anywhere anytime access to banking services via mobile phone and solid infrastructure to insure the performance and reliability of technological services and a continuous help desk support for customers.

This model describes that business rules has to trigger functional business process and this process under the effect of external variables that is political , socio-cultural , economical , demographic and technological, has to pass the current flow into the infrastructure building plan. This planning process has to define the set of functional business process.

On the other hand , after a product released , a product management process should follow the current release and necessary feedbacks has to be feed backed from customer to the business process stage.

This model minimizes the current gap in terms of infrastructure building process connectivity to functional business process flow and customer feedback analysis to reshaping the business rules.





## 7.2 THE TAILORED BUSINESS PLAN FOR MOBILE BANKING

Theoretically All Business plans are similar to each other in terms of managerial view and executive summary. On the other hand, The core part of all business plan which is unique contains some specific variables and sections which need to be analyzed independently.

After conducting an informal interview with GSM operators line managers and Bank project managers. I have decided to put extra items called technology implications and Strategic partners section.

Technology implication Part of the business plan will give the future direction of mobile technology, Strategic Partner section is about the analysis of Banking site.

| Table of Contents  | Benefit   |
|--|---|
| <p><b><i>Executive Summary</i></b></p> <ul style="list-style-type: none"> <li>• Summary of main points</li> </ul>  | <ul style="list-style-type: none"> <li>• Bottom line answers for executives</li> </ul>  |
| <p><b>Mobile Market and Competitive Analysis</b></p> <ul style="list-style-type: none"> <li>• Analyze mobile trends in Mobile industry.</li> <li>• Analyze mobile activities of named competitors</li> </ul> | <ul style="list-style-type: none"> <li>• Knowledge of competitor's mobile activities is a valuable input when developing a mobile marketing strategy.</li> <li>• Make managers more alert to the winds of change, new opportunities, and threatening developments.</li> </ul> |

|  |  |
|--|--|
| <p><b>Technology Implications</b></p> <ul style="list-style-type: none"> <li>Identify and recommend technologies that support business objectives</li> </ul>   | <ul style="list-style-type: none"> <li>As the Internet is a technology driven medium, new technologies can be leveraged to create significant customer value, revenue, or cost savings</li> </ul>  |
| <p><b>Mission Statement</b></p> <ul style="list-style-type: none"> <li>Specific, clear, and brief description of how the client's business site will achieve their vision</li> </ul>                                 | <ul style="list-style-type: none"> <li>A well-defined strategic vision and mission creates enthusiasm for the future course management has charted and poses a challenge that inspires and engages members of the organization</li> </ul>        |
| <p><b>Strategic Partners</b></p> <ul style="list-style-type: none"> <li>Identify needs for strategic partnerships</li> </ul>   | <ul style="list-style-type: none"> <li>In highly turbulent environments such as the Internet, a web of strategic partners maximizes flexibility and capability</li> <li>Provide framework for evaluating potential strategic partners</li> </ul> |
| <p><b>Marketing Plan</b></p> <ul style="list-style-type: none"> <li>Identify market segments to target</li> <li>Identify competitive advantages</li> <li>Identify offline and mobile marketing activities</li> </ul> | <ul style="list-style-type: none"> <li>Maximize ROI of web site and future mobile advertising activities (i.e. media buys)</li> </ul>  |
| <p><b>Revenue Enhancement and Cost Reduction Streams</b></p> <ul style="list-style-type: none"> <li>Identify revenue sources</li> <li>Identify sources of cost-savings</li> </ul>                                    | <p>Provide managers with a rationale for evaluating competing budget requests for investment capital and new staff.</p>  |
| <p><b>Goals &amp; Objectives</b></p> <ul style="list-style-type: none"> <li>Identify client's goals and develop objectives to meet the goals</li> </ul>  | <ul style="list-style-type: none"> <li>Identification and prioritization of goals and objectives provides the framework for steering resources into strategy supportive, results-producing areas</li> </ul>                                      |

## **VIII CONCLUSION AND IMPLICATIONS**

### **8.1 Conclusion Of The Research**

Mobile banking product which is a new technological product offered by GSM technology requires very detailed customer analysis, technological analysis and investment analysis. In Turkey, technological developments mostly first are implemented in financial sectors like banking. Banking has lots of distribution channels. Internet Banking, Telephone Banking and Branches are the channels offered by banks to the customers. The evaluations of these services are not only related to operational costs of banks and also the consumers' behavior.

After the wind of mobile evaluation of in the mid nineties , banks executives focused on a new distribution service implemented on mobile phones. After some researches, Mobile banking product has been found as second most cost effective product by means of operational cost among bank distribution channels.

On the Other hand, while the executives discovered such kind of magical tool, they faced with a historical problem, INTEGRATION.

It is found that to prepare a business plan and information system plan separately does not succeed in order to launch a product. Two different groups in companies

prepare these two plans. These groups, Marketing and Information Designers have different job perspectives and expectations during the project lifetime.

The model Which I have worked on consist of an enhanced business plan for a mobile banking and a information system plan . I called this as Integrated Information Model.

During preparation of this model, I found that the external variables in project planning plays the most critical part of plans. These external variables; Demographic, Economic, Political, Socio-cultural and Technological, become the key elements on preparing integrated Information Model. In addition to those, in the release part of the model, two process controls the released product and feedback of the customer who gets the released product should reshape the Business rules.

## **8.2 Implications**

### **8.2.1 Implications to the Banking Sector**

Banking sector under the heavy regulation and economic constraints has to control their operational costs well . By not estimating customer migration from one banking distribution channel to a new distribution channel , it will be waste of investment and money to launch a new service to the market . If customers are happy to use current channels, sometimes it would be better to enhance the service quality instead of launching a new service.

### **8.2.2 Implications to the GSM Companies**

When the applications of mobile banking in Turkish GSM companies are compared to other companies in the world , it is seen that Turkish GSM companies have to develop more effective strategies while building their information systems . Turkish GSM market , by means of economic indicators is instable and by means of young population is ready to boost its market . Under such volatile entities , GSM companies business and information strategies have to be coordinated according to the demographic , economic , sociocultural , technological and political variables.

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