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THE RESEARCH OF ERP IMPLICATIONS IN MONGOLIAN COMPANIES

MARKET ANALYSIS

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The Research of ERP Implications in Mongolian Companies
Market Analysis

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(1)碩士論文：The Research of ERP Implication in Mongolian

Companies Market Analysis

(2)學術期刊：

本人認為＿＿＿英珠＿＿＿君已完成南華大學企業管理學系管理科學

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之申請資格，特向碩士資格審查小組推薦其初稿，名稱：The Research

of ERP Implication in Mongolian Companies Market Analysis，以參加

碩士論文口試。

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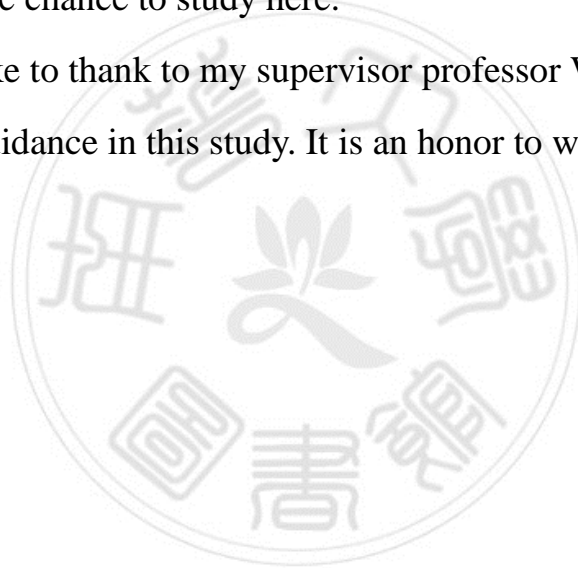
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Abstract

Mongolia has moved into democracy with a booming economy over the past 20 years. ERP is obviously large business in the global market but it is pretty new in Mongolia. However ERP is not recognized well, it already has high demand through the market. Accordingly, this study aims to determine ERP market environment in Mongolia. The study uses qualitative analysis methodology to identify market demand, competition and company's current software usage. Data was collected by hardcopy of survey questionnaires from 100 Mongolian enterprises and involved higher position of employees. Total 100 copies of questionnaires were dispatched and all of them were collected. The study finds that 27% of total companies are planning to change their current software. Moreover, 56% of total companies heard about ERP before but 30% of total companies have well knowledge about ERP. It shows that ERP is not popular in the market of Mongolia. Even market has less information about this solution; companies need ERP system to strengthen their competitiveness and to improve the company's process flow.

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CHAPTER 1
INTRODUCTION

Enterprise resource planning (ERP) is a management solution for every type of businesses. Typically, ERP supports business operation and decision making within its integrated functions such as financial management, marketing and sales function, supply chain management, management information system, manufacturing and service delivery, product planning, human resource and payroll (O'Leary 2000).

However ERP software is focused on enterprise application, it can be customize for every individual business industry (Austin, Cotteleer & Escalle, 2003). Recently, Mongolian business sector is changing and rapidly growing and becoming more and more international. The decision makers understand that they need to shift and change business behaviors if they are to succeed in the open market. In this case, management of companies needs effective information system to improve their competitiveness by decreasing cost and improved logistics. Klaus et al (2000) defines a comprehensive understanding of small and mid-sized enterprises (SME) that the capability of providing the right information at the right time brings remarkable rewards to business that becoming more competitive in the market. Presently, most of the Mongolian enterprises are using domestic company's system. But those systems can't provide clients requirement sufficiently. Accordingly, in the market have strong demands to replace old customized systems within global ERP in Mongolia since domestic systems have complicated procedures. In addition, ERP systems are not recognized widely in Mongolian market but few companies who invested by international group are already implemented ERP.

On the other hand, management knows they need aggregate business solution to manage their whole information in advance to become more competitive in the market. This paper focuses on determining Mongolian market. The study also aims to demonstrate what kind of system Mongolian companies' currently using, companies' knowledge about ERP system and market demands. Mongolian market is increasingly demanded complex software. This study indicates that Mongolian companies have high expectations for ERP but also fairly less information.

Furthermore, we aim to express software supplier's competition and market share in this study. Since market have high demand, it is necessary to characterize competition and define market situation.

The main objective of the empirical part of this study is to survey the 100 companies for defining current market situation in Mongolia. From point of view of this study is exploring how Mongolian software market demand is chanced in recent. Naturally, the empirical evidence gathered from 100 companies cannot be generalized to pay great extent, but findings from the research could provide useful information to ERP vendors.

CHAPTER 2
LITERATURE REVIEW

2.1 Enterprise Resource Planning

Davenport (1998) indicates that ERP system seem to complete entrepreneurs dream. These business software bundles guarantee the consistent integration from claiming every of information streaming through an organization such as financial, human resource, supply chain and customer information. To supervisors who need struggled, at great cost within extraordinary frustration, incompatible information systems, conflicting with practices and those guarantee for standard solution to the issue of business integration is tempting. Obviously, organization need have been open the door to enterprise system.

ERP is computer-based system to handle an organization's connections and simplify integrated and real-time planning, production and client response (O'Leary, 2001). Kumar & Van Hilsberg (2000) defines about ERP systems that are integrating information and information based systems within functional areas in the business.

Moreover, Tadjer (1998) said that ERP is one of the applications with combined interface. According to understand enterprise system, we also must to learn their possibility of risk. But first we need to realize the design of ERP to solve problem as the crumbling of information in large scales business industry (Davenport 1998).

Klause et al. (2000) recorded different perspectives of ERP concept. First, the most understandably, ERP is a product structure of computer software. Second, ERP can be gotten as improvement objective of planning all processes and data of organization into a wide-ranging integrative

configuration. In the end, ERP is the main element of an infrastructure that provides a solution to business.

2.1.1 History of ERP

The historical background of ERP follows back to the 1960s; when most enterprises were developing the integrated computing systems applying Inventory Control Packages (IC) in order to automatically succeed a company's inventories. O'Brien (2002) defines that the legacy systems are typically based on programming languages such as COBOL and FORTRAN. Technically, Material Requirements Planning (MRP II) system appeared in the 1980s, aiming to improve the manufacturing process (Wallace & Kremzar, 2001). The concept of ERP was introduces in the early 1990s as an enterprise-wide and a cross-functional integration of the core organizational business process, including manufacturing, distribution, accounting, financial, human resource, project, inventory, service and maintenance management (Laudon & Laudon, 2006).

Some scholars evaluate that ERP technology is considered as "Extended ERP" after 2000s because Customer Relationship Management (CRM) and Supply Chain Management (SCM) are involved into the core functions in original ERP system (Rashid, Hossain & Patrick, 2002). ERP has a wide range of functions in all industrial and non-industrial areas such as aerospace and defense, banking, consumer products, construction, healthcare, education and research, insurance, raw and processed materials, logistics, transport, sale, public sectors, telecommunication. Implementing and supporting cost of ERP system was expensive and took long time to recover costs in the early years after ERP emerged. Since then, the implementation and maintenance cost of ERP system was greatly reduced due to the retrofit of technical infrastructure.

Presently, a lot of ERP systems are developed for small and medium size

enterprises. Numerous profitable products which include SAP, Oracle and BAAN are now available in the marketplace. Moreover, emerging ERP systems need web services and service-oriented architectures which are the major underlying technologies.

2.1.2 ERP Systems Architecture

Most of the ERP vendors experienced from the MRP and financial software services fields and large scaled enterprises used old legacy information system which realized the limitations of the 1970s to 1980s. Several of these old systems were developed domestic while others were developed by different vendors using numerous different management systems based on data, languages, packages and constructing non compatible solutions unfit for seamless data flow between them (Davenport, 2000). O'Leary (2000) defines that it was difficult to increase the capacity of such systems or the users were unable to upgrade them with the organization's business changes, strategic goals and new information technologies.

ERP system required having main characteristic such as modular design including many different functions (financial, accounting, manufacturing and distribution), using centralized database management system (DBMS); modules integrate and provide seamless data flow among the modules which increasing operational transparency through standard interfaces (Klaus, Roseman & Gable, 2000). Although, ERP is generally complex systems that involving high cost, offering flexible solutions and best business practices, require time-consuming tailoring with configuration setups for integrating business functions, ERP's modules work in real time with online batch processing capabilities (Klaus, Roseman & Gable, 2000). However particular ERP vendors offer ERP systems with some degree of distinctive feature but the core modules are such as accounting management, financial management,

manufacturing management, sales & distribution management, human resources management and e-Business module (Kumar & Van Hillsgerberg, 2000).
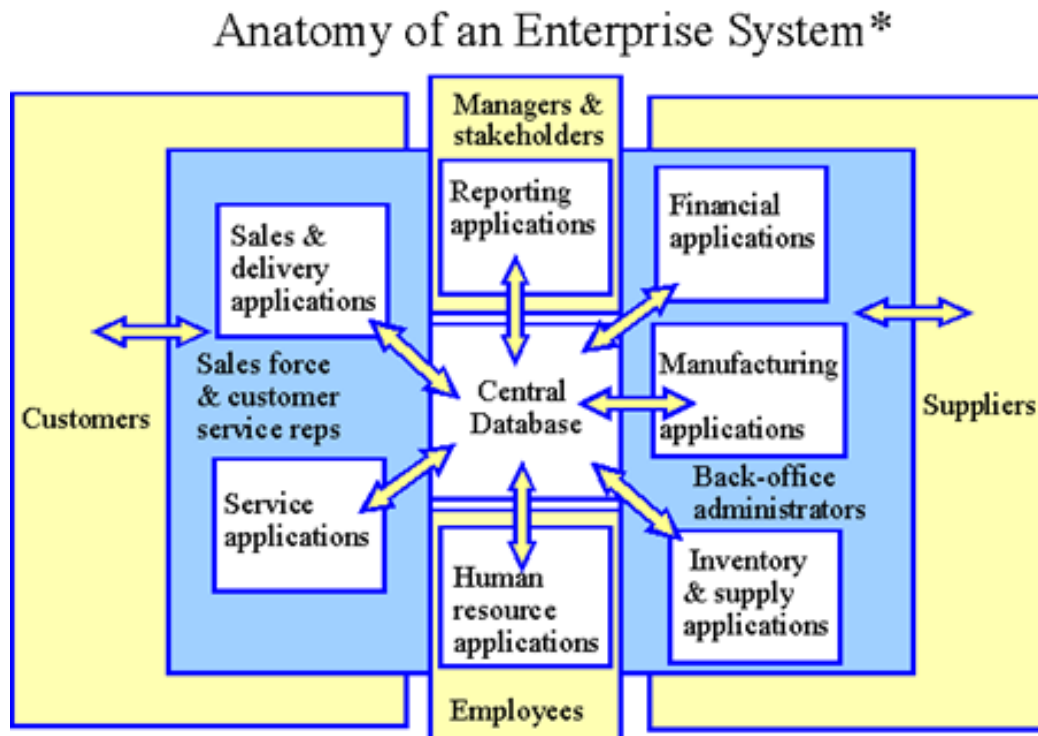
Figure 2.1 Davenport, The ERP system

Data source: Adapted from Davenport's illustration on p. 124

The extent of the term "ERP" is a bit confusing when comparing it to the term "e-commerce". Generally, ERP is more concentrated with internal functionalities of organizations. On the other hand, e-commerce or e-business emphases on the business process across the organization. Companies are no longer competing with each other and coordinating enables several companies to compete as a whole while under recent global business strategy. Laudon and Laudon (2006) discusses that people are considering a supply chain as the competition unit.

2.1.3 ERP Implementation

Once Davenport (1998) mentioned that speedy implementation of an enterprises system may be a wise business move, but a rash implementation is not. An ERP is strongly characterized by implementation project, which can be seen in implementation costs that can amount up to five times a license purchase price (Adam & O'Doherty, 2000). Organizations are still eager to introduce ERP to their business. Most common reasons for their interest include (1) the use of multiple points of input with duplicated effort in existing systems, (2) the inability of the existing system to support organizational needs, (3) the requirements of extensive resource for maintenance and support, (4) the need of the enterprise to reengineer their business process, (5), the growth of enterprise and incompatibility of several information systems and (6) the inability of employees to respond easily to questions or information requested by key customers (Ibrahim, 2010). Necessary operational improvements that companies are struggling to achieve include inventory reduction, total costs reduction, provision of reliable delivery dates, making of assortment of production and providing better service (Ibrahim, 2010).

Austin et al. recognized in 2003 that even though ERP systems have gained major prominence in enterprises and research throughout the world, successful implementation costs that run as high as 3% of total revenue. Numerous scholars offered dissimilar critical issues and success factors that affecting ERP implementation. But few empirical studies have been conducted to validate those factors (Ehie & Madsen, 2005). It is clear that the implementation of a new ERP system causes massive change in the organization. The impact and the effects of that change need to be engaged into concentration and managed as carefully as possible. Critical issues that necessary to be taken into consideration to confirm successful implementation

which including obligation from top administration, reengineering of the existing processes, integration of ERP with other business information systems choice, management of consultants and training of employees to the new system (Bingi et al. 1999).

There are many process models for ERP implementation (Ehie & Madsen, 2005). Ehie and Madsen (2005) divide the critical steps of implementation process into five phases as following:

1. Project preparation
2. Business blueprint
3. Realization
4. Final preparation
5. Go live and support

Preparation of the project is important, and it consists of comprehensive planning procedure including people handling leadership roles, establishing business targets and determining the project plan to be followed. In phase two, current business processes should be analyzed carefully, and the preliminary selection of the ERP system should be based on the analysis. Also, new process design possibilities should be mapped. In the realization phase, it is important to develop the technical foundation while testing of the entire process design. The fourth phase, final preparation includes testing of the entire process design integration under full data load and extreme situations, while the people intended to actually use the system and others influenced by it will go through the education and training needed. Lastly, on go live and support part emphasizes process flow optimization and continuous expansion of the system (Ehie & Madsen, 2005).

Knowledge management has been identified as one of the most important success factors in ERP implementation. It has received considerable academic interest during the last decade (Jayawickrama et al., 2013). Companies should

pay attention to explicitly managing the knowledge created during the implementation process. Ehie and Madsen (2005) found that successful ERP implementation also depends on effective project management. They highlight the fact that any system that attempts to integrate internal functions of both customers and vendors will likely cause trouble to the companies involved if the basic project management fundamentals are not understood. ERP implementation should instead be seen a major organizational change process that should not be conducted or even planned without holistic understanding of the process.

2.2 The ERP Market

ERP business began in the sixties as a computer-based tool to automate repetitive manufacturing programs (Adam & O'Doherty, 2000). Traditionally, the ERP market has been targeted by the supplier's size such as large ERP vendors, mid-sized ERP vendors and small business vendors. It was assumed that the same ERP vendor couldn't serve a product to various segments. But that view has been disproved recently. We can see global ERP vendors competing successfully in all segments (Gartner, 1990). The Fortune (2000) largely selected and positioned their ERP strengths, but many of them still depend on transmission of MRP and MES reserves within confident geographies, divisions or individual services. For the concentrate on standardizing IT architectures all over the organization, integrated ERP systems that are extended to the entire organization and changing many of the mid-sized market plant applications. The modern large ERP vendors have begun to attack the market observation that their products are large and complex. They are creating inroads into the mid-size market through speedily developing reseller channels (APTEAN, 2001). The mid-size market is one of the main areas where the larger ERP vendors trust they have prospects to

sustain or speed-up growth, even as ERP opportunities at the higher end of the market failure (Drew Robb, 2011). APTEAN (2012) study indicates that the ERP market is constant and growing after a bit of a slow-down during the recent collapse. Enterprises postponed investing in ERP during the difficult time but now they are starting to invest again to grow their business with the improving economy. ERP market space, exciting as it is. It isn't really of much significant to anyone except ERP software suppliers. Moreover, there are number of suppliers who are enjoying a common of the ERP market share. SAP gained by innovations in customer-server figuring to become the leader in the ERP market. Rival offerings by JD Edwards and Oracle took modification and extended ERP as an underlying platform available to all mid and large scaled enterprises. The Oracle and Microsoft's standardization of database are permitted for greater integration of enterprise modules such as CRM and vertical solution as industry specific functionality. The main thing for succession is became the capabilities of the channel partners. Enterprises were presented with test of handling and effectively using the resulting excess of data. Determining ERP software market size is so difficult for the similar reasons as well as it depends on whether you are speaking about all business software or some defined sub-set. That means billions of dollars are spent each year on ERP software, no matter how you define it. Most of the companies in the world have some form of ERP.

2.2.1 ERP Vendors

Drew Robb (2011) classified the ERP business market into 3 main types of vendors basically to choose enterprise resource planning software depends on company's size and needs as following as:

1. Large Enterprise ERP

   In this category include most popular ERP systems for large scaled organizations such as ASP Oracle and Microsoft. In general, those vendors sell their ERP expensively to market which they have complexity solution with high cost for their implementation and support. These vendors are regularly international business with presence in many different geographic regions.

2. Mid-market ERP

   For the mid-size market QAD, Lawson, Epicor, Sage and IFS are included. Naturally, their solutions are to manage and support with less correspondingly as well. Vendors are specifically built to handle this market and supply to single or multiple locations of deployment.

3. Small business ERP

   The vendor's offering have changes to reflect market condition. They are currently offering ERP systems particularly designed for small sized business such as Exact Gloe, Syspro, Netsuite, Visibility, Consona, CDC Software and Activant Solution. They provide ERP systems which are easy to implement and support within lower price. Most ERP systems in this group are single location installations and built for a single vertical.

Mongolian ERP market is different compared to global that domestic software commonly used in Mongolia. However it is difficult to define market shares in Mongolia, we found a study which was carried out by Dataquest analysis from Gartner Group 2012 in Table 2.1.

Table 2.1 ERP vendors by revenue

S/No	Vendor	Revenue (billion $)	Market share (%)
1	SAP	6.1	24
2	Oracle Applications	3.117	12
3	Sage Group	1.5	6
4	Infor	1.5	6
5	Microsoft Dynamics	1.169	5

*5 largest ERP vendors in the world (revenues and market share in 2013 by Gartner Dataquest).

Data source: Gartner group's ERP market share update, 2014 May 12

According to Gartner Dataquest, SAP is totally dominating world market when comparing ERP vendors. The other vendors are fighting for second position. The SAP occupies approximately 24% of the world market and Oracle as 12%. In order to Gartner reports, work day, workforce software, cornerstone on demand and NetSuite are the five fastest growing vendors in the worldwide from 2012 to 2013. Their profit grew 86.1%, workforce Software 57.6%, Cornerstone on demand 57% and NetSuite 39.6%. Market size of the worldwide ERP software is $25.4B and the growth over 2012 is 3.8% in 2013. Worldwide ERP software market share in 2013 is shown in Figure 2.2.

Worldwide ERP Software Market Share, 2013

Market Size: $25.4B, 3.8% Growth Over 2012
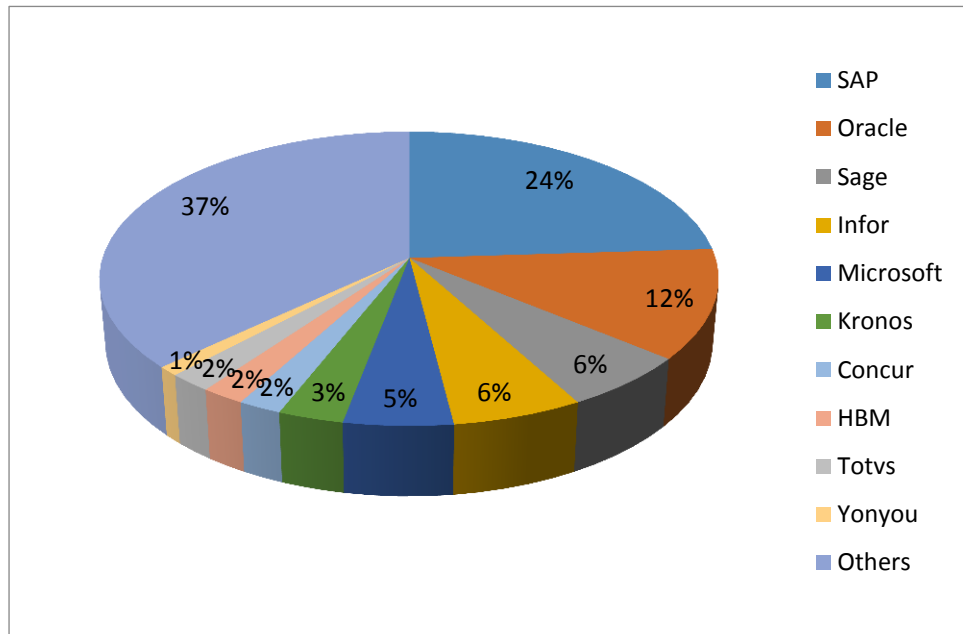

Figure 2.2 Gartner Dataquest, Global ERP vendor's market share

Data source: Gartner group's ERP market share update, 2014 May 12

CHAPTER 3
METHODOLOGY

3.1 Purpose

The main purpose of this study is defining certain things as well as Mongolian current software business market situation and ERP needs. Additionally, we also aim to determine market opportunity and competition of ERP vendors. Though, analyzing ERP market is comprehensive task. We classified our study into 3 main phases:

1. What is Mongolian enterprise's current software usage?
2. Does market have demand?
3. What is customer specific need in ERP

3.2 Measurement

This study has 3 major frames are operationalized: (A) Current software, (B) ERP knowledge and demand, (C) Customer specific needs.

3.2.1 Measurement of Current Software Usage

This part contains 6 questions to measure the Mongolian current software usage.

Part A:

(1) Does your company have any business solution?
(2) What kind of functions does your company use recently?
(3) Does your company use domestic or International business solution?
(4) What are advantages of your company current software?
(5) What are disadvantages of your current software?
(6) What is the most important services do you expect from software vendors?

Questions 1 to 3 and 6 have multiple choices. Questions 4 to 5 are open items to fill. Question number six is measured on a five-point Likert scale and respondents are involved the question number 6 to indicate their level of importance toward each statement between 1 = most important to 7= less important.

3.2.2 Measurement of ERP Knowledge and Need

Following questions are measuring the ERP knowledge and needs of Mongolian market.

Part B:

(1) Have you ever hear about ERP?

(2) How well do you know about ERP?

(3) Does your company have any interest to implement ERP?

(4) Please write reasons why does your company want to implement ERP?

(5) When do you plan to implement ERP?

(6) What ERP software are you planning to buy?

Question number 1 to 3 and 5 to 6 have multiple choices. Question number 4 has open item to fill.

3.2.3 Measurement of Customer Specific Needs

This part contains 11 questions to measure customer specific needs in ERP system.

Part C:

(1) Do you need online reports? To evaluate importance from "most important-1" to "less important- 3".

(2) How important is your reports and information to be indicated by graphics? To evaluate importance from "most important-1" to "less important- 3".

(3) Is it important to you to control the entire operations of company? To evaluate importance from "most important-1" to "less important- 3".

(4) Is it important to exchange information between your company's department and having an immediate cooperation? To evaluate importance from "most important-1" to "less important- 3".

(5) Does your company need automated inventor function? To evaluate importance from "most important-1" to "less important- 3".

(6) Do you need budgeting function? To evaluate importance from "most important-1" to "less important- 3".

(7) Do your customers need online ordering system? To evaluate importance from "most important-1" to "less important- 3".

(8) Does your company need cost management system? To evaluate importance from "most important-1" to "less important- 3".

(9) Is it important to reduce warehousing cost? To evaluate importance from "most important-1" to "less important- 3".

(10) Is it important to you to know price and profit changes? To evaluate importance from "most important-1" to "less important- 3".

(11) Please choose your 5 most important needs from above 10? To evaluate importance from "most important-1" to "less important- 5".

All above questions will be measured on Likert scale. Respondents are asked to indicate their level of evaluation toward each statement between 1 and 3 in question number 1 to 10. Although, question number 11 is indicating level of evaluation toward below 10 questions between 1 and 5 as 1 is most important and 5 is less important.

3.3 Translation

The questionnaire used in this study was originally composed in English. Afterward, it is translated into Mongolian for data collection from Mongolian organizations. Each question of survey is discussed respectively with a business consultant in Mongolia. According to their suggestion, some questions are modified. Moreover, 12 Mongolian classmates who study in Nanhua University discussed to make sure translation validity as well as they give response to the questions. From here, some questions are cultivated.

3.4 Sampling Plan

The empirical data collection is aimed to mainly cover eight major business areas. In recently, the fields of mining industry, trade, construction, manufacture, insurance, bank, investment and service industries are prospering in Mongolia and most people of population work in those areas. Hence, those fields are considered as represents in Mongolian organizations. In addition, participants were informed of the purpose of the study as well as treated anonymously and remain completely confidential.

3.5 Data Collection Procedures

Data collection is handled through 100 copies of questionnaires to respondents. This survey covered employees who have higher positions such as CEO, accountants, IT engineers, and marketing managers, managers, financial managers, financial analysts, economists and total 100 copies are returned.

CHAPTER 4
FINDINGS

4.1 Sample Characteristic

The sample collected from 100 Mongolian companies by hardcopy of questionnaire. Sampling survey covered more than 8 business industries such as trade 28%, manufacturing 13%, insurance 8%, bank 6%, mining 5%, service 5%, construction 4%, investment 3% and other industries are 28% in Figure 4.1.
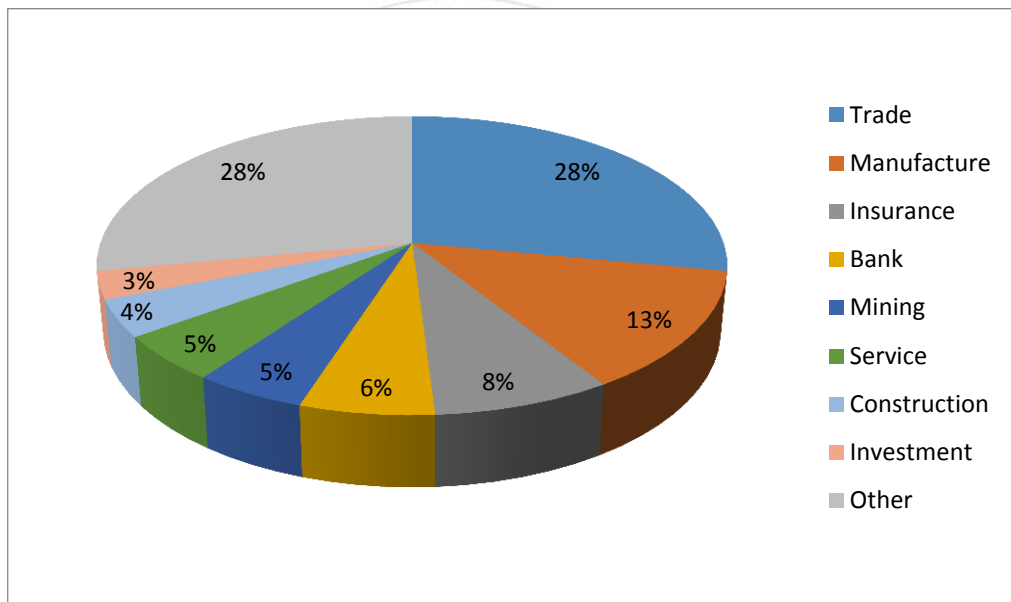

Figure 4.1 Percentage of companies by industry

Data source: This research is summarized

Although, this questionnaire involved the higher positioned employees such as accountant 31%, IT engineer 11%, economist 10%, financial manager 8%, CEO 4%, manager 4%, marketing manager 3%, financial analyst 3% and others are 26% in Figure 4.2.
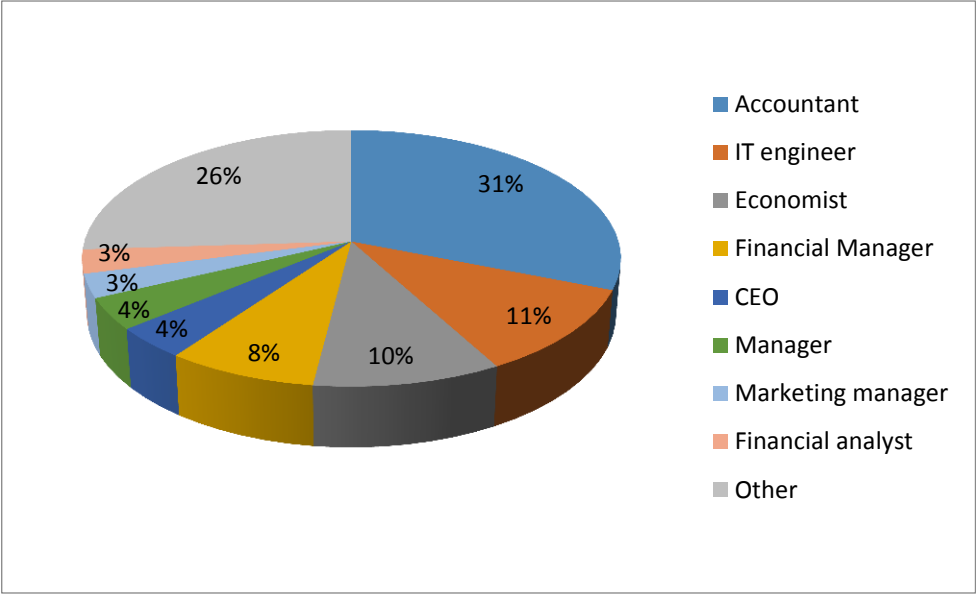
Figure 4.2 Percentage of respondents by position

Data source: This research is summarized

4.2 General Information About Company's Business Solution

According to the survey result 99% of respondents answered that they are using software to manage their organization process but only 1% of respondents are not using software currently which shown in Figure 4.3.
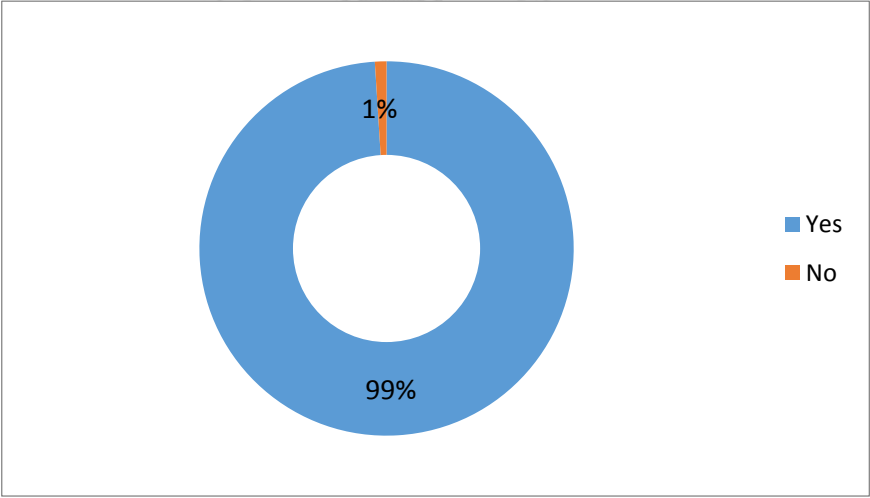

Figure 4.3 Percentage of company's software usage

Data source: This research is summarized

95 % of total companies are using domestic finance and accounting system and 38% of them have human resource management system. According to survey result, 21 companies are using customer relationship management system and 14 companies are using manufacturing system. It shows that companies are giving more focus on managing finance and financial reports. We also found that only 3 of 100 companies are using ERP software recently in order to result. Figure 4.4 is showing the respondent companies current software usage.
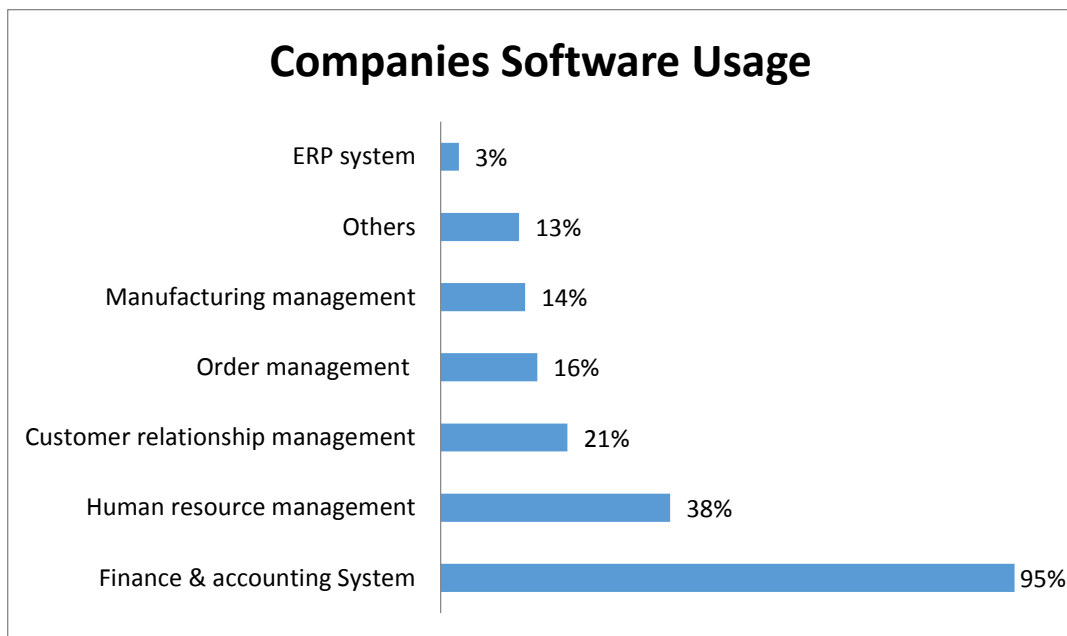
Figure 4.4 Percentage of the companies' software type

Data source: This research is summarized

4.3 Advantages and Disadvantages of Domestic Software

In order to survey result, companies are mostly using software to get financial report which will be taken to long time to prepare. After that, they are thinking about to make their work easier and procedure data. Respondents answered about their current domestic software's advantages are make their financial statements, make their work easier, it is easy to use, it can combine

their data, it save their time, make prosecute easier, fast and it has good security.

The disadvantages are their software has error when running system, manual works, not enough to process data, not update regularly, cannot automate organization's other process, no language options, disabled to integrate other systems and most of the tasks are depends on accountants. Both advantages and disadvantages of the all respondents company's current software is shown in Table 4.1.

Table 4.1 Advantages & disadvantages of current software

Advantages	Disadvantages
Make financial statements	Have errors when running system
Make my work easier	Manual works
Easy to use	Not enough to process data
Combine data	Difficult to upload a data
Save time	Not update regularly
Make prosecute easy	Not automated organization's other process
Fast	No language options
Make accounting prosecute easy	Disable to integrate other systems
Have a good security	Works are depends on accountants

Data source: This research is summarized

4.4 ERP Client's Expectation

Mongolian companies mostly expect regular updates from their software vendors. Then companies are expecting qualitative maintenance and reasonable price for their after sale support. When companies implement new software, they are expecting training and fast responses from their software vendors. Finally, companies want to have good communication with vendors during their service. Promotion is expected but not as high as other categories which shown in Figure 4.5.
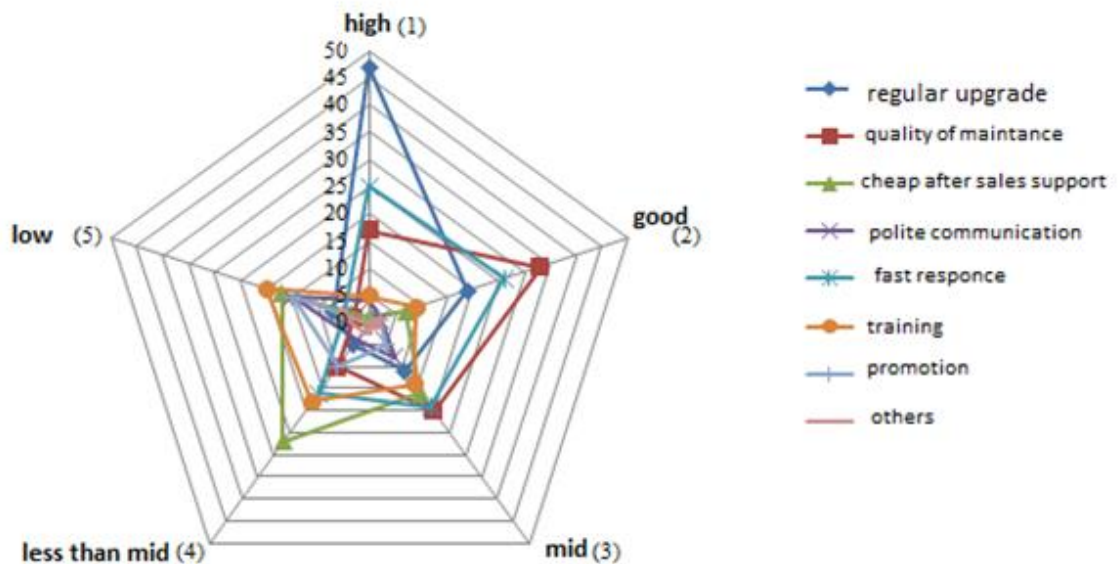

Figure 4.5 Level of customer's expectation

Data source: This research is summarized

4.5 ERP Knowledge in Mongolian Market

From total of the 100 respondents, 56% are heard about ERP system before and 44% haven't heard. This result shows that the ERP system is not well recognize in Mongolia in Figure 4.6.
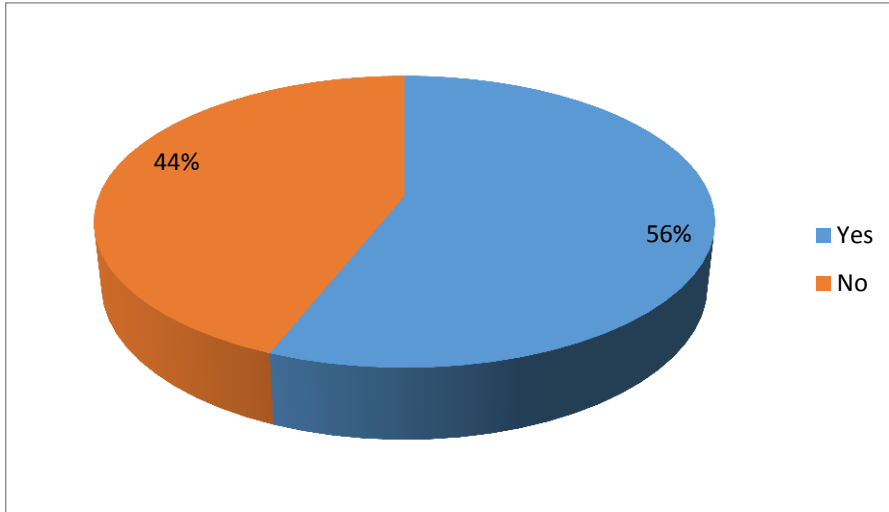
Figure 4.6 Percentage of companies ERP knowledge

Data source: This research is summarized

About 70% companies who heard ERP before (56%), they don't know well about ERP system. It shows that ERP system is not well recognized in Mongolian market. In order to result market doesn't have enough information or knowledge about ERP system currently. Only 30 % of the companies who know ERP system have well knowledge that is shown in Figure 4.7.
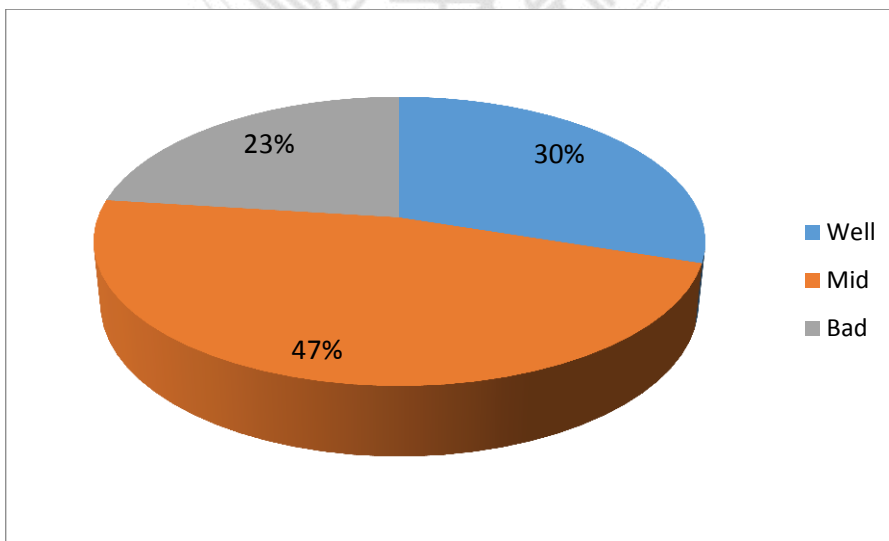
Figure 4.7 Level of company's ERP knowledge

Data source: This research is summarized

If comparing the companies who know about ERP (56%), 71 % companies are invested by international group company. 29% are local companies. It shows that international invested companies have well knowledge about ERP system rather than Mongolian local companies in Figure 4.8.
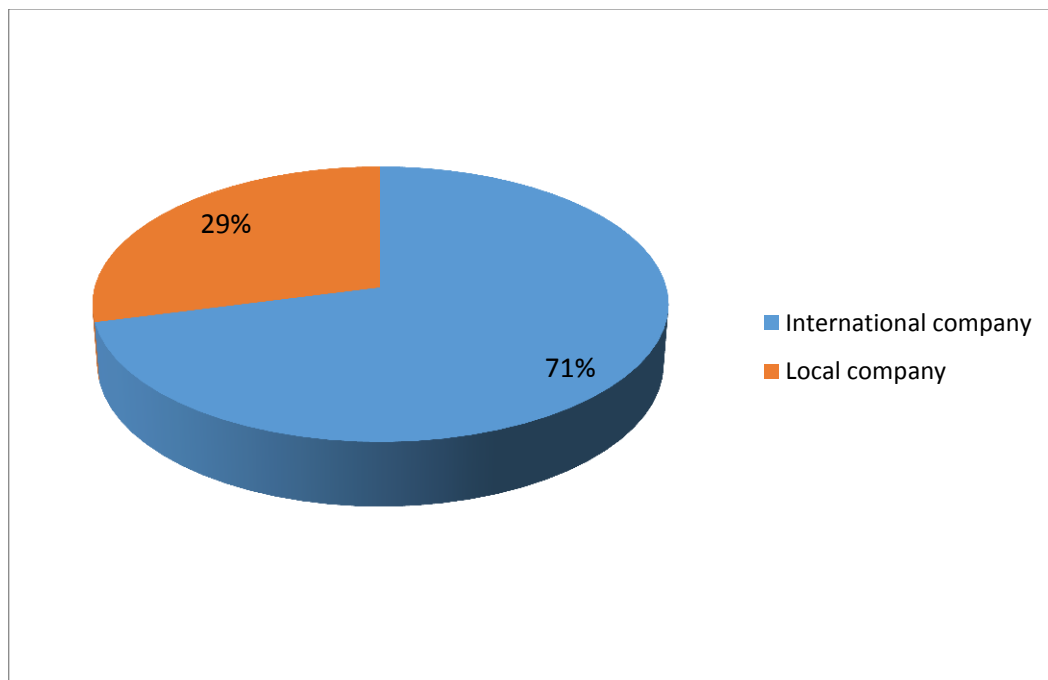
Figure 4.8 Percentage of the companies ERP knowledge

Data source: This research is summarized

4.6 Company's Interest

According to Survey result, 27% of companies have interest to change their current software and other 73% of companies have no interest to change their current software. The result is shown in Figure 4.9.
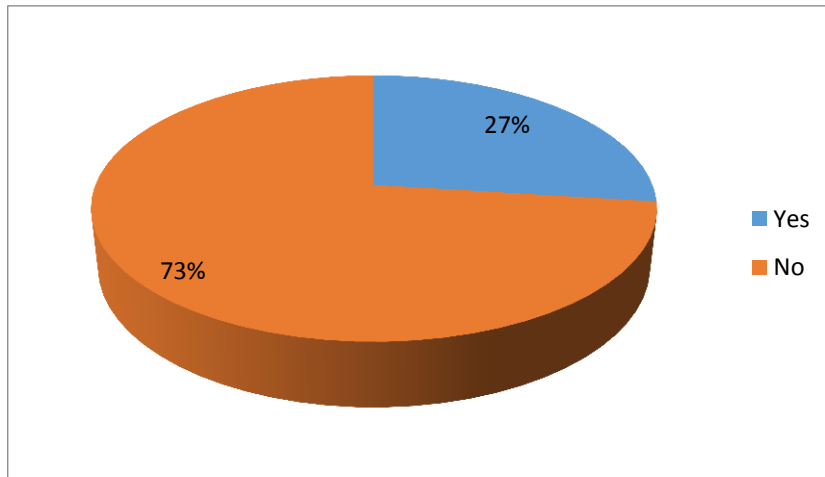
Figure 4.9 Percentage of the companies' interest to change current software

Data source: This research is summarized

Companies who interested to change their current software (27%), they want to buy ERP types such as SAP 10 %, Oracle 11%, and Microsoft Dynamics Navision is 18%. The 61% of companies interested in other ERP systems. Additionally, some ERP systems such as SAP, Oracle, and Microsoft Dynamics Navision are more recognized in the market rather than the other ERP systems. The result is shown in Figure 4.10.
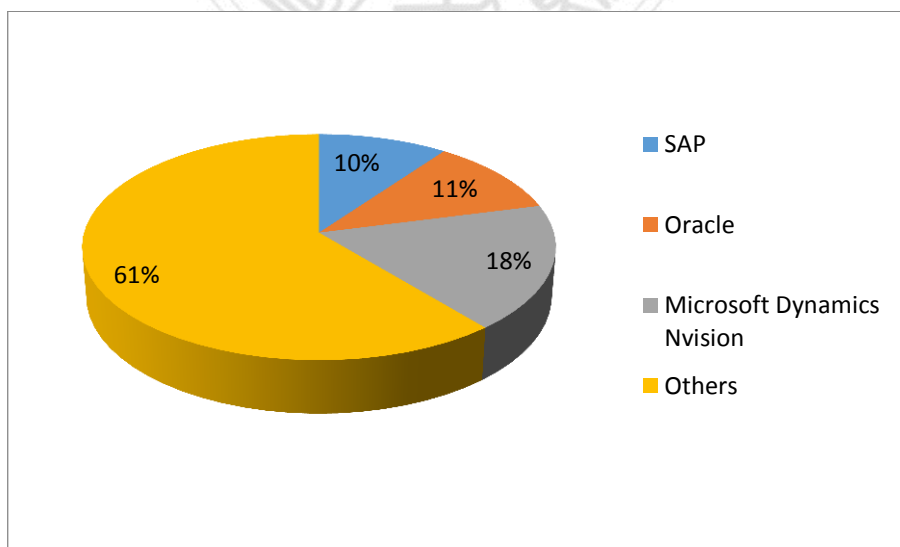
Figure 4.10 Percentage of the companies' interest to implement ERP

Data source: This research is summarized

The companies which are planning to buy ERP system, 16% of them are planning to buy ERP system after 3 to 6 months and 29% of companies will buy ERP after 6 to 12 months. There are also 47% of companies' answers that they will buy ERP after 1 to 3 years and 8% of respondents answered that after 4 years they will buy ERP in Figure 4.11.
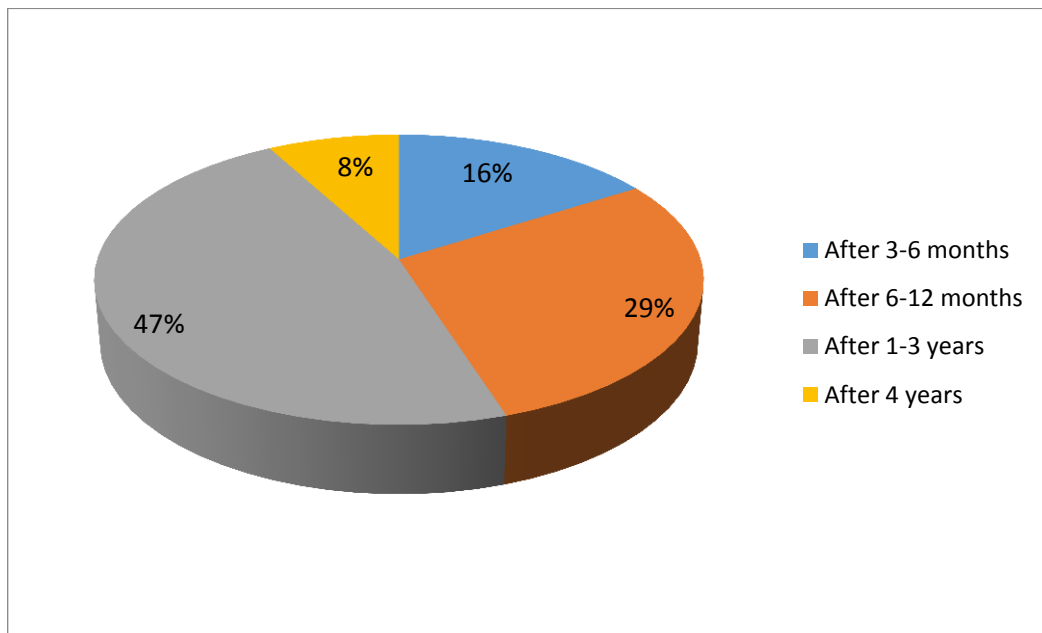
Figure 4.11 Period of ERP buying plan

Data source: This research is summarized

4.7 Company's ERP Need

Total companies who respond our survey, the most high needs are online report and to control whole company operation. After that it is important to see their report by graphic, exchange information and corporation between each department immediately in Figure 4.12.
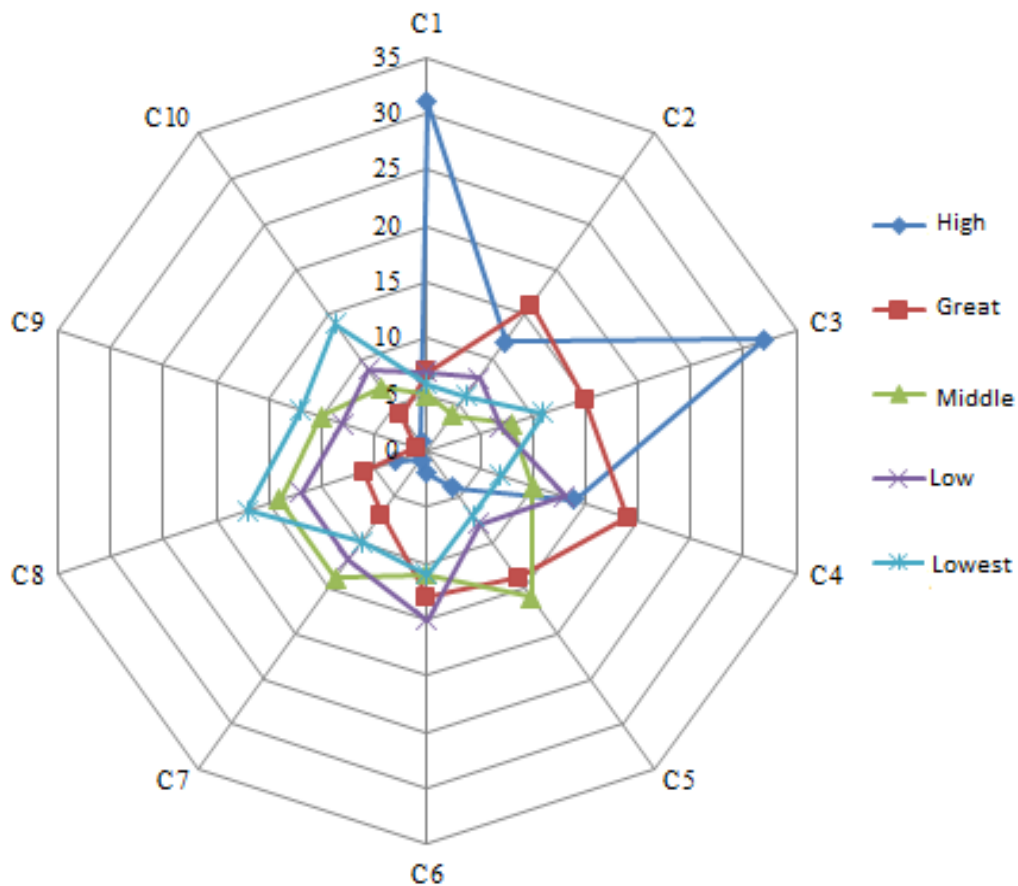
Figure 4.12 Level of ERP needs

Data source: This research is summarized

According to the Survey result we found that customer needs are depends on their business process. Every industry top needs are control their whole internal operation and then department's information exchange. For the service and mining industries profound is exchanging information for each department. Although, bank and insurance industries necessary to see their reports by graphic. For the manufacturing industry, they need cost management. You can see it from Figure 4.13.
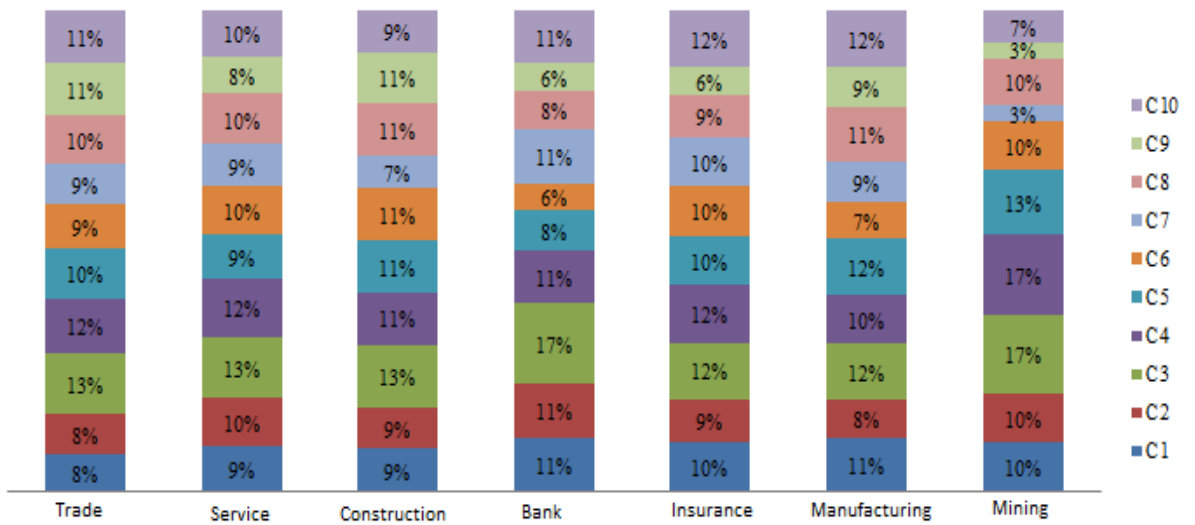
Figure 4.13 Highest ERP needs by industry

Data source: This research is summarized

For the Construction and Manufacturing industries, online purchasing and reducing warehouse cost is less important. Trade, service, insurance and banking industries are no need to reduce warehousing cost in Figure 4.14.
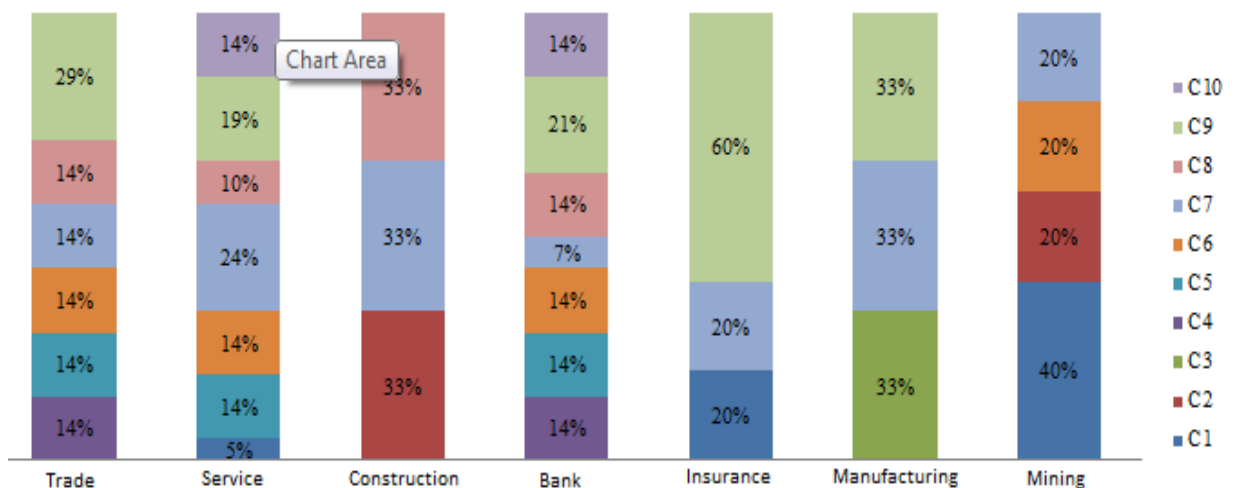
Figure 4.14 Lowest ERP needs by industry

Data source: This research is summarized

Although, Table 4.2 is showing the questions from C1 to C10 which identifying industries specific need.

Table 4.2 Questions related to client's need

C1	Do you need online report and information?
C2	Is it important to you to see your information by graphic?
C3	Is it important to control whole company operations?
C4	Is it important that immediately to exchange information and corporation between each department?
C5	Do you need automated inventory management?
C6	Does your company need budget management system?
C7	Do your clients need online purchasing system?
C8	Does your company need cost management system?
C9	Does your company need to reduce warehousing cost?
C10	Is it important to you to know about changing price and profit information immediately?

Data source: This research is summarized

4.8 Domestic Software Market Share

The study shows that Mongolian companies are commonly use domestic software which developed by domestic vendors. 64% of the surveyed companies are cooperating with domestic vendor Integrative BI LLC and 8% of the respondents choosing MCS LLC who offering financial system. Hence Integrative BI LLC has far more consumers than the other software vendors

and it shows that Integrative BI LLC is leading vendor in the Mongolian market in Figure 4.15 and Table 4.3 shows the detail information of other categories.
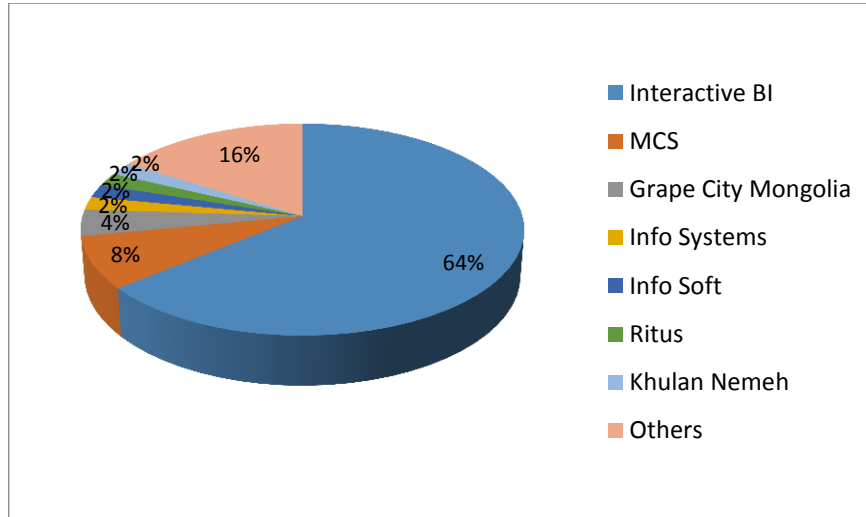
Figure 4.15 Percentage of the software vendors' market share

Data source: This research is summarized

Table 4.3 Software vendors of other category

Other Categories	Percentage
Nimon System	1%
Open ERP	1%
Open source	1%
Oracle Financial Services Software Ltd	1%
Recbon PTY Ltd	1%
Sage	1%
Summit, Super assist	1%
TCS LLC	1%

USI LLC	1%
Apex Soft LLC	1%
MAX LLC	1%
Naviworld Mongolia LLC, Microsoft AX, Navision	1%
Financial counting LLC	1%
Railway LLC	1%
Khulan impex	1%
India, Nucleus software	1%

Data source: This research is summarized

60% of participant companies are using Diamond software. Other participants implement differ software from different software vendors, in order to their needs. On the other hand, Mongolian companies often choose different software from different vendors for their each department instead of implementing ERP in Figure 4.16.
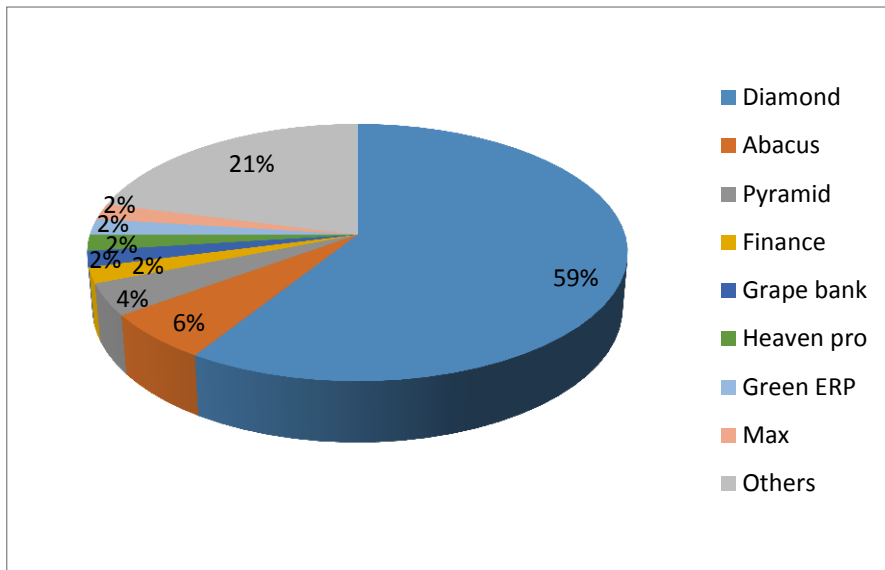
Figure 4.16 Percentage of the Mongolian popular software

Data source: This research is summarize

Table 4.4 Software's of other category

Other categories	Percentage
APEX Soft	1%
Oracle	1%
Flex cube	1%
Galileo software	1%
Impact	1%
Leader	1%
Microsoft Dynamics Navision	1%
Nimon	1%
Nucleus	1%
Open ERP	1%

Quick book	1%
Redmine, Openfire	1%
Sage	1%
Solution	1%
SQL	1%
BKAS	1%
BANX	1%
MAX software	1%
Insurance program	1%
Solomon software	1%
SAP	1%

Data source: This research is summarized

According to survey result, Interactive BI is leading the market even though they are domestic software vendor. It shows that Mongolian company's common use domestic financial and human resource management software. Respondents say that the main reason to choose Integrative BI is common used in Mongolia. Secondly, they choose Grape city because of it is famous company's branch of MCS.

CHAPTER 5
CONCLUSIONS

5.1 The ERP current market

Mongolia has moved into democracy with a booming economy over the past 20 years. Since Mongolian economy is growing, the businesses are following to expand. We are noticed that many large scaled companies are interested in implementing ERP systems. The aim of study was to explore Mongolian ERP market. In addition, this research also aimed to determine ERP needs, customer expectation, competition and opportunity in Mongolia.

According to our survey result, every 1 of the 4 companies are planning to change their current software. It shows that (1) they have financial ability to change current software (2) they understand that software's role and importance. Although, respondent companies current (domestic) software have a lot of error when running and cannot able to exchange information. However they don't know about ERP, they still have strong demand of ERP to manage their business operation. Mongolian entrepreneurs understand that they need ERP system in order to manage internal operation but only 3 of 100 respondent companies implemented ERP. It expresses that ERP system is not well known and recognized in the market. We also found that market have never ever been big marketing campaign to introduce ERP. Though, market has not enough information about ERP, 27% of respondents (who knows ERP) answered that they want to implement ERP especially big group companies. It shows market has high demand of this software. ERP is new and has big potential prospects in Mongolian market. The prospect we surveyed that they saw the strategic potential which they expecting from systems, but they don't have full information about ERP. We have faith in potential ERP clients as a

result have more strategic point that implementing ERP system will help them to see it as a strategic opportunity to strengthen their competitiveness and improve the company's process flow.

5.2 ERP Implications

Since, large scaled group companies already have ERP knowledge, the growth of new sales to them will be increase. According to survey result, 27% of companies are decided to change their current software within ERP and 39% of total companies are interested in global ERP systems such as Oracle, SAP and Microsoft Dynamics Navision. In order to reach them, ERP vendors should offer their solution and give more focus on recognizing ERP into the Mongolian market. However, those ERP systems are well recognized in the Mongolian market rather than other ERP systems. On the other hand, 16% are planning to change their current software after 3-6 months and 29% of companies will buy ERP after 6-12 months. Currently, few markets for ERP market in Mongolia, but business environment will be changed a lot for one year that 47% of companies will buy ERP system. We have also 8% of companies who interested to implement ERP system after 4 years. It describes that there will be much potential over 4 years later.

5.3 The Competition and Market Share

The ERP competition is not so heavy in Mongolia. The result in this study shows that Mongolian companies are out of ERP but common using domestic systems. In order to survey result, companies are choosing software which is common using in the market. It express that company wants to use sampled software in practice. Although, we found software fame is influence to customers buying decision. In order to survey result, Integrative BI possess 64%, MCS 8%, Grape city 4% in Mongolian market and other 16 software vendors provide 1-2 companies by their systems. It shows that Mongolian

software environment is not so competitive for ERP vendors.

We also found that there are not many competitors in Mongolian market but only one monopoly vendor Interactive BI. Only 10 companies are equally vendors are equally sharing 40% of market. In this case, domestic vendors can't provide market demand which means Mongolia is big potential market for ERP vendors.

5.4 Discussion

The main research question of this study was (1) "Have you ever heard about ERP?" Mongolian companies are using domestic software which has separate systems to manage organizations process. This study aims to determine ERP market in Mongolia. Accordingly, it is important to define ERP knowledge of Mongolian enterprises. In order to result, ERP system is not strongly recognized in Mongolian business industries, decision maker's feel that their current software can't fully provide their demand. However, few organizations have knowledge about ERP, most of them confused as ERP as financial system. On the other hand, international and large scaled companies already recognize and familiar with ERP. Recently, Mongolian economy is growing fast because of mining and agricultural in industries. Foreign investors are seeking to invest and entering to Mongolia market. In this case, market is having high demand of ERP while companies are expanding.

Other sub questions were (2) "Do your company has any interest to implement ERP?" (3) Why do you want to implement ERP?" (4) When do you plan to implement ERP?" (5) "What ERP system are you planning to buy?" Companies are start searching knowledge about ERP. They get interest in ERP system because of their demand. According to those questions, we found that Mongolian organizations want to set up and enter to global market. But they need complex system to develop their internal business process.

Even Mongolian ERP market hasn't grown as global market yet, it is an advantage of they start having a demand of ERP. Also this study aim to determine software vendor's competition and market share. As we mentioned, Mongolian companies are often using domestic software which developed by their wants and needs. Though, Interactive BI has big amount of market share than other domestic software providers. In addition, SAP, Oracle Microsoft is more recognized in the Mongolian market. In order to our survey result, three companies implemented Microsoft, SAGE and Oracle ERP.

In the end, Mongolian software vendors are considering to develop domestic ERP system. For example, one of the Mongolian biggest group company MCS is developing domestic ERP by themselves which called Green ERP.

5.5 Limitation and Recommendation

There are some limitations in this research design that could be addressed in the future research. First, the degree to which our research would be generalizes to other countries ERP market. For example, level of Mongolian ERP market may have different from other countries market. Thus future research can address to test and compare with other countries sample. Next, this study did not measure a concept consulting business in ERP that can consummate the research. Since consultant firms have effective playground in the market, it could be more efficient research in the future study.

Besides consulting business, there are several objective measures which are congruence of consequences to express such as common used software in Mongolia, the ERP market knowledge, customer need, software vendor's competition and market share are noted in this study. We hope it would be worthwhile to consider their use this research for certain purpose however these types of objectives may be less appropriate for Mongolian companies and vendors. Furthermore, we found that ERP has not well recognized in the

Mongolian market yet and they interested in global ERP system. The global ERP vendors need to give more focus on marketing campaign and advertisement to attract prospects. On the other hand, there is not strong competition in the market besides domestic vendors. It shows that market have great opportunity for global ERP suppliers to win the market.

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APPENDIX A: Survey Questionnaire in English

A questionnaire for ERP Market Analysis

Purpose of the survey: Determine which business solution companies commonly use in Mongolia and market of ERP demand.

General information:

Company name:

Business type:

Founded date:

Respondent name:

Position:

Part A: this part questions related to company's current software information.

A1. Does your company use any business solution?

☐ Yes ☐ No

A2. What kind of systems does your company use?

☐ Finance and accounting management system

☐ Customer relationship management system

☐ Human resource management system

☐ Manufacturing software

☐ Order, adjustment system

☐ Others ———

A3. Does your company use international or domestic software?

☐ Domestic ☐ International

A4. What are advantages of your current software?

    1. _____

    2. _____

    3. _____

A5. What are disadvantages of your current software?

    1. _____

    2. _____

    3. _____

A6. What is the most important service do you expect from software vendor companies? Please prioritize 1 to 5. (1 most important and 5 less)

☐ Permanent upgrading   ☐ Fast response

☐ Maintenance quality   ☐ Training

☐ Service with reasonable price   ☐ Bonus

☐ Amity   ☐ Others_____

Part B: this part of questions related to market's ERP knowledge and need.

B1. Have you ever hear about ERP?

☐ Yes   ☐ No

B2. How well do you know do you know about ERP?

☐ Well   ☐ Good   ☐ Bad

B3. Does your company have any interest to implement ERP?

☐ Yes   ☐ No

B4. Please write why do you want to implement ERP?

_____

_____
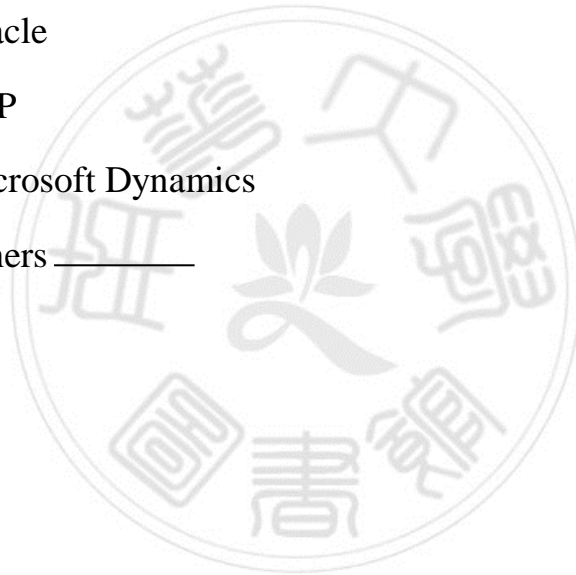
B5. When do you plan to implement ERP?

☐ After 3 to 6 months   ☐ after 6 to 12 months

☐ After 1 to 3 years   ☐ more than 4 years after

B6. What ERP software you interested to implement?

☐ Oracle

☐ SAP

☐ Microsoft Dynamics

☐ Others _____

Part C: Following questions related to client demand. Please circle the level

that represents your answer to each of the following questions.

		a lot	middle	few
C1	Do you need online reports and information?	○	○	○
C2	How important is your reports and information to be indicated by graphic?	○	○	○
C3	Is it important to you to control the entire company's operations?	○	○	○
C4	Is it important to exchange information between your company's departments and to have an immediate cooperation?	○	○	○
C5	Do you need automated inventor for your company?	○	○	○
C6	Do you need Budget management system for your company?	○	○	○
C7	Do your customers need online order system?	○	○	○
C8	Does your company need cost management system?	○	○	○
C9	Is it necessary to reduce warehouse cost for your company?	○	○	○
C10	Change of price and profit information is important for you know?	○	○	○

C11. Please choose your five most need's importance from above 10 demand and prioritize 1 to 5. /1 most significant and 5 less significant/.

C1 ☐   C2 ☐   C3 ☐   C4 ☐   C5 ☐

C6 ☐   C7 ☐   C8 ☐   C9 ☐   C10 ☐

APPENDIX B: Survey Questionnaire in Mongolian

Судалгааны зорилго: Компаниудын түгээмэл хэрэглэдэг бизнест зориулсан програмыг тодорхойлох, компаниудын ERP системийн хэрэгцээг тодорхойлох.

Ерөнхий мэдээлэл:

Компанийн нэр:

Үйл ажиллагааны чиглэл:

Байгуулагдсан он:

Судалгаа өгсөн хүний нэр:

Албан тушаал:

A. Компанид одоо байгаа бизнест зориулсан програмын тухай

A1. Танай компанид бизнест зориулсан ямар нэг програм байдаг уу?

☐ Тийм ☐ Үгүй

A2. Ямар төрлийн программ хэрэглэдэг вэ?

☐ Санхүү, нягтлан бодох бүртгэлийн програм

☐ Харилцагчийн удирдлагын програм

☐ Хүний нөөцийн удирдлагын програм

☐ Үйлдвэрлэлийн програм

☐ Захиалга, нийлүүлэлтийн програм

☐ Бусад _____

A3. Хаанахын програм ашигладаг вэ?

☐ Монголын ☐ Олон улсын

A4. Одоо хэрэглэж буй програм таны ажилд ямар ач холбогдол үзүүлдэг

    бэ? Бичнэ үү.

    1. ──────────────────────

    2. ──────────────────────

    3. ──────────────────────

A5. Одоогийн програмаа ашиглах явцад ямар асуудал гардаг вэ? Бичнэ үү.

    1. ──────────────────────

    2. ──────────────────────

    3. ──────────────────────

A6. Програм хангамжийн үйлчилгээ үзүүлж буй түнш компаниасаа

    хүлээдэг хамгийн чухал үйлчилгээ юу вэ? /Хоосон нүдэнд 1-5

    дугаараар эрэмбэлэнэ үү/ (1-хамгийн чухал, 5-чухал биш)

☐ Байнгын шинэчлэлт   ☐ Хурдан шуурхай

                                         байдал

☐ Засвар үйлчилгээний чанар   ☐ Сургалт

☐ Дагалдах үйлчилгээний үнэ хямд   ☐ Үнийн бус

                                         урамшуулал

☐ Ээлдэг харилцаа   ☐ Бусад ─────

B. ERP системийн тухай

B1. Та ERP системийн тухай сонсож байсан уу?

☐ Тийм   ☐ Үгүй

B2. ERP системийг хир сайн мэдэх вэ?

☐ Сайн

☐ Дунд

☐ Муу

B3. Танай компани ERP системийг үйл ажиллагаандаа нэвтрүүлэх

сонирхол байгаа юу?

☐ Тийм   ☐ Үгүй

B4. Яагаад сонирхож байгаа вэ? Бичнэ үү

_____

_____

B5. Хэзээнээс нэвтрүүлэхээр төлөвлөж байгаа вэ?

☐ 3-6 сарын дараагаас   ☐ 6-12 сарын дараагаас

☐ 1-3 жилийн дараагаас   ☐ 4-с дээш жилийн дараагаас

B6. Ямар ERP систем авахаар төлөвлөж байгаа вэ?

☐ Oracle Оракл /Oracle/

☐ САП /SAP/

☐ Майкрософт Динамик нэвишон /Microsoft Dynamics Navision/

☐ Бусад _____

C. ERP системийн үйлчлүүлэгчийн хэрэгцээ

		маших	дунд	бага
C1	Танд онлайн тайлан, мэдээлэл хэрэг болдог уу?	○	○	○
C2	Тайлан, мэдээлэл графикаар илэрхийлэгдэх нь хэр чухал вэ?	○	○	○
C3	Компанийхаа үйл ажиллагааг бүхэлд нь хянах танд чухал уу?	○	○	○
C4	Танай компаний алба хэлтэс хоорондын мэдээлэл солилцоо болон хамтын ажиллагаа шуурхай байх нь чухал уу?	○	○	○
C5	Танай компанид автоматчилагдсан бараа материалын бүртгэл хэрэгтэй юу?	○	○	○
C6	Танай компанид төсвийн удирдлагын систем хэрэгтэй юу?	○	○	○
C7	Танай компаний үйлчлүүлэгч нарт онлайн захиалгын систем хэрэгтэй юу?	○	○	○
C8	Танай компанид зардлын удирдлага хэрэгтэй юу?	○	○	○
C9	Танай компани агуулах хадгалалтын зардлаа бууруулах шаардлагатай юу?	○	○	○
C10	Үнэ болон ашгийн мэдээлэлд өөрчлөлт орсныг шуурхай	○	○	○

мэдэх нь танд чухал уу?

C11.   Дээрх 10 хэрэгцээний /C1-C10 / өөрт хамгийн чухал 5 хэрэгцээг ач

холбогдлоор нь дугаарлана уу?   /1-хамгийн их ач холбогдолтой, 5-бага

ач холбогдолтой/

C1 ☐   C2 ☐   C3 ☐   C4 ☐   C5 ☐

C6 ☐   C7 ☐   C8 ☐   C9 ☐   C10 ☐

APPENDIX C: Respondents Companies List

	Company name	Business type	Established year
1	MICC	Bank	2005
2	Airtrans	Air ticket agency	1997
3	MAKC	Insurance	2011
4	Altan Taria LLC	Manufacturing	1959
5	APU	Manufacturing	1924
6	Atar Urguu	Manufacturing	1942
7	Beren Group	Trade	1993
8	XAC bank	Bank	2002
9	Bishrelt holding	Trade	1994
10	Khaan Buuz	Service	2012
11	Blast LLC	Trade	2011
12	Khalkh Buudain Tsatsal LLC	Agriculture	2009
13	Bodi International	Trade	2003
14	BOSA LLC	Trade	1996
15	BOSA Impex	Trade	1996
16	Grouth Partner	IT Consalting	2012
17	BSB service	Trade	1991
18	Power Plant 4	Government company	1981
19	Transgobi LLC	Heavy frieght	2008
20	ETT LLC	Mining	2010

21	Erdenet khivs LLC	Manufacturing	1981
22	Air link LLC	Air ticket agency	2001
23	EZNIS Airways LLC	Local airport company	2006
24	MMM Holding	Trade	2012
25	GEM international LLC	Beverage manufacturing	1999
26	Legas LLC	Law	2003
27	Soyombo LLC	Insurane	1991
28	Gobi LLC	Cashmere manufacturing	1981
29	GOYO LLC	Cashmere manufacturing	1993
30	Khan Burgedei	Trade	1991
31	Hera Equipment	Trade	2004
32	Hera Holding	Multiple industries	2003
33	Khurd Group LLC	construction, transport, trade	1997
34	ALS Group	Geochemistry	2003
35	JUST AGROLLC	Agriculture	2002
36	NOMUN Inter LLC	Trade	1997
37	MT drilling LLC	Search gadding	2007
38	M-Oil Group LLC	Mining	1993
39	MAK	Trade	1992
40	MAKS Group	Trade	1998
41	Media impex International	Mining	2006
42	NEWCOM LCC	Incestment	1993

43	Mobicom	Telecommunication	1998
44	Ammak MGL LLC	Trade	2010
45	MIG Insurance	Trade	2006
46	Mongol EM Impex	Manufacture	1923
47	Mera	Insurance	1997
48	Monnis Motors	Trade	1998
49	Monnis International	Mining	1998
50	MONOS FARM	Manufacture	1990
51	MON Poliment LLC	Mining	1992
52	Monroad	Road, bridge, construction, maintenance	2001
53	MSM	Trade	1998
54	Namir Group	Trade	2001
55	Naran Motors	Trade	2006
56	Naran Trade	Trade	1991
57	New progress LLC	Road, bridge, construction, maintenance	2000
58	NIC	Oil　Import	1941
59	Nomin Foods	Trade	1992
60	Nomin Holding	Trade	1992
61	Mandal General LLC	Trade	2003

62	Gangar invest LLC	Construction	1991
63	Oyunii Undraa LLC	Trade	2010
64	Petrovis	Oil Import	1941
65	ANUNGOO	Trade	1999
66	Monre LLC	Insurance	1995
67	Chono Group	Investment, Hospitality	1992
68	MCS Group	Multiple industries	1993
69	Shinkhlai Group	Investment, oil import	2011
70	BD Sec LLC	Service	1991
71	Ach CBC LLC	Service	2009
72	Sod Mongol LLC	Trade	1999
73	ANUN LLC	Trade	1997
74	SBB Trade LLC	Manufacture	2002
75	Chingis Beer	Beverage manufacture	1997
76	NAB LLC	Construction	2002
77	Tavan Bogd Trade LLC	Trade	2000
78	Tavan Bogd Motors	Trade	2004
79	Ard capital Group	Stock	2007
80	Khungun Beton LLC	Construction	1967
81	Technic Import LC	Service	1958
82	Petro Matad	Oil	2004
83	American School	Education	2006
84	Geo Expert LLC	Catering	2005

85	Mongolian Railway	Government company	2008
86	УБЦТС ХК	Power	1932
87	Korea Town	Construction	2006
88	Batbaigal LLC	Manufacture	1996
89	Ulaanbatar Guril LLC	Manufacture	2002
90	Unitel	Telecommunication	2006
91	Vitafit LLC	Manufacture	1998
92	Wagner Asia	Trade	1996
93	Golomt	Bank	1995
94	Khaan Bank	Bank	1991
95	Mongol Bank	National bank	1924
96	Trade & Development Bank	Bank	1990
97	Bodi insurance	Insurance	1996
98	ARD Insurance	Insurance	1994
99	Mongol Insurance	Insurance	1934
100	Tenger Insurance	Insurance	2001