

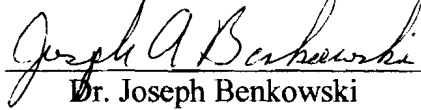
The Global Economy and its Effect on Companies Specializing in Injection Molding in
the States of Minnesota, Wisconsin and Illinois

by

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ABSTRACT

The Global Economy is becoming a way of life in today's society. The boundaries that once confined our world are now being broken down by advances in technology and the competitive nature of today's society. We may all like to think that we still live in a world where what we need can be purchased from the shop down the street at a competitive price. In reality, we live in a world where in order to compete, we must be able to supply our products and our services at the lowest possible cost and be able to service our customers, who may be producing in lower cost countries. Understanding the consequences of what this new society is doing to manufacturing jobs in the United States is what this paper will address. This paper will focus on the impacts being seen in companies specializing in Injection Molding in the states of Minnesota, Wisconsin and Illinois. Manufacturing jobs in the United States have been, and continue to be, impacted by the changes brought about by our new global economy. Not only must we understand

the consequences of this new global economy, but we must define what our actions will be to meld or compete with this new economy. The world is changing and we can choose to adjust to fit in or we can be left behind and become a service based country.

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Chapter I: Introduction

Statement of the Problem

The purpose of this study is to understand the impacts that the global economy is having on manufacturing companies specializing in Injection Molding in the states of Minnesota, Wisconsin and Illinois and to determine what might be done to minimize any negative impacts on these same companies. A survey will be conducted amongst a group of random companies specializing in Injection Molding in the states of Minnesota, Wisconsin and Illinois to determine how they have been impacted by the global economy, as well as what actions they have taken to react to the new global economy. With the changing world we are living in, it is important for us to understand what options exist to successfully compete in this new marketplace. Additional background information will be obtained from books, the internet and various academic journals. Berger (2005) states that:

Big forces behind globalization are the great freeing up of trade and capital flows; deregulation, the shrinking cost of communication and transportation; an I.T. revolution that makes it possible for companies to digitize the boundaries between design, manufacturing and marketing and to locate these functions in different places; and the large number of workers and engineers in low wage countries.

Purpose of the Study

To understand the impacts of the global economy and what can be done to minimize any negative impacts to further strengthen manufacturing companies specializing in injection molding in the states of Minnesota, Wisconsin and Illinois.

Assumptions of the Study

Companies specializing in the field of Injection Molding in the states of Minnesota, Wisconsin and Illinois are being affected by the global economy.

Information obtained for this study is representative of the impact on randomly selected companies specializing in injection molding in the states of Minnesota, Wisconsin and Illinois.

Individuals completing the survey will be knowledgeable regarding the impact the global economy has or is having on their business environment.

Definition of Terms

U.S. – United States -A republic in the North Western Hemisphere comprising 48 conterminous states, the District of Columbia, and Alaska in North America and Hawaii in the N. Pacific. (The American Heritage Dictionary of the English Language, Fourth Edition, copyright 2000)

AFL CIO – American Federation of Labor, Congress of Industrial Organizations (The American Heritage Dictionary of the English Language, Fourth Edition, copyright 2000)

Standard Industrial Classification – (SIC) A United States government system for classifying industries by a four digit code. Established in the 1930s, it is being supplanted by the six digit North American Industry classification System, which was released in 1997. However certain government agencies, such as the U.S. Securities and Exchange Commission (SEC), still use the SIC codes. (The American Heritage Dictionary of the English Language, Fourth Edition, copyright 2000)

Limitations of the Study

The study is limited to responses from the randomly selected companies specializing in Injection Molding in the states of Minnesota, Wisconsin and Illinois who participated in the study. The participants represent a random variety of companies specializing in Injection Molding, but not specific to any one industry type.

Methodology

Surveys will be distributed to random companies specializing in Injection Molding in the states of Minnesota, Wisconsin and Illinois to determine the impact of the global economy on their respective manufacturing business. The results will be compiled and available to all respondents upon request. The study will be supplemented by an analytical review of published information from books, the internet and academic journals.

Chapter II: Literature Review

In Chapter Two, a review of literature related to the global economy and its impact on U.S. manufacturing companies will be discussed. Specifically, a review of published information relative to past studies on the subject will be reviewed, analyzed and summarized. The first section will address what is a global economy. Section two will address how the global economy is affecting U.S. Manufacturing. Section three will continue with a review of how specifically the global economy is affecting injection molding companies in the states of Minnesota, Wisconsin and Illinois. Section four will highlight factors affecting competitiveness in the molding industry. Section five will cover the general reaction to the Global Economy. The conclusion will be present on what injection molding companies in the states of Minnesota, Wisconsin and Illinois are doing today to minimize the impact of the new global economy, as well as a discussion of what actions will need to be taken in the future to address these ever increasing and changing competitive pressures.

What is a Global Economy?

The Global Economy is characterized by the reduction of barriers around the world and the ability to market and produce products and services all over the globe. With this new economy, comes a variety of benefits to capitalize on the largest and most economical workforces, raw materials and technologies. The global economy has expanded across the globe due to the many advances in technology. These advances in technology are allowing developing countries to begin competing with developed countries. This increase in competition is creating a significant increase in competition amongst businesses. We are no longer competing within our own country, but across the

globe. Berger (2005) states that “Globalization is the result of manager’s everyday decisions about how they distribute their activities amongst various sites of innovation, design, production and sales.” The options available for these decisions are now virtually limitless with the every expanding global economy that we live in. The constant pressure to remain low cost and competitive is what is ultimately driving this growth. If a product or service can be made more economically or quickly somewhere else in the world, the answer becomes obvious. (“India and the Global Economy,” n.d.). Globalization or the Global economy can be used to describe the particular period of time that we are living in today, much like other periods were described by the Great Depression, the Cold War Era, and the Space Age.. Globalization or the Global economy best describes the political and economic culture of today’s atmosphere.

How is the Global Economy affecting U.S. Manufacturers?

U.S. manufacturers are being affected by the global economy in many ways due to the increased competition this new economy is bringing. When competing with countries that can maintain significantly lower labor costs, it becomes difficult to compete and maintain these manufacturing jobs in the United States. Statistics obtained from the AFL-CIO indicate that the percent change in annual manufacturing jobs from 2000 to 2006 has been -17.8%. The state of Illinois saw a reduction of 21.5% during this same time period while Minnesota saw a reduction of 12.4% and Wisconsin a 15.0% reduction. Of all states, only Alaska and North Dakota showed an increase during this same time period. (“Annual Manufacturing Jobs,” n.d.).

How is the Global Economy affecting Injection molding companies in Minnesota, Wisconsin and Illinois?

Occupational projections specific to molding, core making and casting machine setters, operators and tenders, metal and plastic in Illinois project a 1% reduction in employment for the period 2004-2014 while Minnesota is projecting a 7% reduction and Wisconsin a 4% reduction. ("Occupational Projections," n.d.)

Statistics published by the AFL-CIO for job loss due to the North American Free Trade Agreement for the time period covering 1993-2004 indicate a job loss of 19,278 for Minnesota, 47,701 for Illinois and 25,403 for Wisconsin. These totals are against a total job loss in the United States of 1,015,290 employees. ("Annual Manufacturing Jobs," n.d.).

Factors affecting competitiveness in the molding industry

Molding companies are experiencing the labor cost advantage as one of the most significant threats to its survival. Other factors, such as the disadvantage of higher transport costs, inventory costs, quality and regulatory compliance concerns and obvious longer lead times, are rarely a deciding factor in who gets the contract. Molders who specialize in simple commodity type part designs are being affected the most, as this technology is easy to replicate and source offshore with lower labor costs and less technology. ("Plastics Technology," n.d.). Finding a market niche or unique segment is what is increasingly becoming the focus of injection molders who want to establish a successful business model for the future. There are many examples in industry of creating a unique niche, be it specializing in short run applications, concentration on a specific business segment or relying on the more complex products that require highly skilled

design expertise. The examples are numerous, yet there are many who are still relying on the outdated business model of commodity molding. Automation is also being utilized by many to counter the effects of lower labor costs, but is only effective when dealing with jobs that do not involve high model turnover rates.

Reaction to the Global Economy

Reaction to the global economy is a moving target that many companies are trying to locate and isolate. Molding manufacturers must identify the core competencies or specific market niche they will specialize in within their industry and determine the best reaction plan to ensure stability. For some, it may be to completely move their business operations to low cost countries. For others, it may mean outsourcing a portion of their business, while keeping a portion of it in the United States. What is certain is that the global economy is constantly changing and we will be affected for many years to come. Finding the best reaction method is a combination of identifying what the strengths of a particular firm are and how that company can best capitalize on those strengths.

Chapter III: Methodology

This Chapter will outline the methodology utilized in the research of this study. The purpose of the study is to understand the impacts that the global economy is having on U.S. manufacturing companies specializing in injection molding in the states of Minnesota, Wisconsin and Illinois and to determine what might be done to minimize any negative impacts on these same companies.

Subject Selection and Description

The subjects for this study have been selected by obtaining information on companies specializing in injection molding in the states of Minnesota, Wisconsin and Illinois from the Thomas Register of companies. The companies were randomly selected by printing a listing of all companies in each state and randomly selecting the first company. From this beginning point, every 5th company was selected. From a total population of 412 companies, samplings of 200 subjects were selected to receive a survey on the impacts of the global economy on their business.

Instrumentation

The survey utilized for this study was created solely for this purpose. The survey design was formatted to encompass and answer questions relative to this particular study. Research was done on prior surveys to obtain insight and ideas into making the survey an effective research tool. Questions included in the survey consisted of multiple choice, likert scaling, as well as forced choice and open ended, utilizing nominal and interval scaling.

Data Collection Procedures

A 15 question survey was sent to top executives of 200 randomly selected companies obtained from a larger population of companies specializing in injection molding in the states of Minnesota, Wisconsin and Illinois. A random selection process was used to select the 200 companies from a total population of 412 companies. A one page written survey, along with a cover letter explaining the purpose of the survey, was then sent to the top executives in each of these companies requesting their participation and input into the survey.

Data Analysis

Data analysis was performed using Minitab statistical software. Multiple statistical analyses were performed utilizing descriptive statistics, T test and table summaries. Table summaries are available and listed for each survey question administered.

Limitations

Limitations of the methodology utilized for this study are that a small representation of all manufacturers is represented. Based on the sampling technique, companies specializing in injection molding and representing only the states of Minnesota, Wisconsin and Illinois are represented. Different industry types are not segregated and therefore the results may be skewed based on the random sample and business focus of the companies selected. As with all surveys, I was limited by the response rate to the surveys for which I sent out. The survey is intended to give a broad overview of how companies specializing in injection molding in the states of Minnesota,

Wisconsin and Illinois are being affected by the global economy and is not designed to focus on a particular industry or the entire United States.

Chapter IV: Results

This chapter will summarize the finding of the research performed on how the global economy is affecting companies specializing in injection molding in the states of Minnesota, Wisconsin and Illinois.

The results were obtained from a target sampling of 200 total companies. Of the 200 companies surveyed, 65 were returned for a 32.5% return rate. Of the 65 surveys returned, 23 were returned as undeliverable and 4 were returned indicating their business was no longer in business or was focused on sales and distribution rather than manufacturing.

The objectives of the study were fulfilled by the responses to fifteen survey questions. The results summarized below represent the 65 companies who responded with useable information for the research.

Findings

Descriptive statistics were utilized to summarize the results of the survey respondents with actual responses and percentages listed. Tables have been created that will show results for each survey question. Specific graphs and tables for each question can be found in Appendix B. The responses for the open ended question can be found in Appendix C.

Table 1: Number of years in business

<i>Years in Business</i>	<i>Number</i>	<i>Percentage</i>
0-10	2	3.1
11-20	12	18.5
21-30	12	18.5
31-40	13	20.0
41 +	26	40.0
Total	65	100

The first question focused on the number of years each company had been in existence. The results indicate that over half of all companies surveyed have been in existence for over 31 years with the majority of these companies being in existence for 41+ years.

Table 2: Type of product manufactured

<i>Type of Product</i>	<i>Number</i>	<i>Percentage</i>
Custom	40	61.5
Other	12	18.5
Automotive	5	7.7
Medical	3	4.6
Precision	3	4.6
Thermo set	2	3.1
Total	65	100

The second question focused on the type of product being manufactured by the specific injection molding company. Over one half of all respondents reported Custom molding as their primary business with another 18.5% reporting other as their primary business.

Table 3: Percent of sales dollars exported

<i>% Sales dollars exported</i>	<i>Number</i>	<i>Percentage</i>
0-10	53	81.5
11-20	9	13.8
21-30	2	3.1
Over 50	1	1.5
Total	65	100

Question three was focused on identifying what percentage of sales dollars for each company was currently being exported. This question was asked to determine if product was being produced in the United States and then exported to a lower cost country for assembly. The results indicate that well over three quarters of all respondents are currently exporting anywhere from only 0-10% of their total sales dollars. One

company reported over 50%, but it was definitely the outlier of the group and not indicative of the norm.

Table 4: Manufacturing presence outside of the United States

<i>Mfg. presence outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	8	12.3
No	57	87.7
Total	65	100

Question four was utilized to determine if any of the surveyed companies had currently already set up operations in low cost countries to react to the pressures of global competition. The results strongly indicate that the minority, only 8 companies or 12.3% of the companies surveyed, currently have manufacturing presence outside of the United States.

Table 5: Plans to develop manufacturing presence outside of the United States

<i>Plans to develop mfg. presence outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	12	18.5
No	52	80.0
Maybe	1	1.5
Total	65	100

Question 5 was utilized to expand on question four to determine if even though they did not currently have manufacturing presence outside of the United States, did they have plans to develop presence outside of the United States in the next five years. Surprisingly, these results also show that only a small percentage, 12 companies or 18.8 percent, have plans to develop manufacturing presence outside of the United States within the next 5 years.

Table 6: Sales and marketing presence outside of the United States

<i>Sales and Mktg. presence outside of the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	10	15.4
No	55	84.6
Total	65	100

Question 6 was focused on determining if sales and marketing presence were established outside of the United States. The results of this question follow the pattern of companies who currently have manufacturing presence outside of the United States. A detailed review of the data indicates that it is the same companies reporting manufacturing presence, as well as sales and marketing presence outside of the United States. It can be surmised from the data that companies who support manufacturing presence outside of the United States also believe there is a benefit to having Sales and Marketing presence outside of the United States as well.

Table 7: Plans to develop sales and marketing presence outside of the United States

<i>Plans to develop sales and mktg. presence outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	14	21.5
No	51	78.5
Total	65	100

Question 7 was utilized to expand on question 6 to determine that if even though they did not currently have sales and marketing presence outside of the United States, did they have plans to develop presence outside of the United States in the next five years. This question parallels question 5 and seems to indicate that we can expect the same pattern or trend for those particular companies who are looking to expand manufacturing, will also be looking to expand sales and marketing outside of the United States.

Table 8: Percent of sales lost to competition from global manufacturing

<i>% Sales lost to comp. from global mfg.</i>	<i>Number</i>	<i>Percentage</i>
0-10	37	56.9
11-20	18	27.7
21-30	4	6.2
31-40	3	4.6
41-50	2	3.1
50 plus	1	1.5
Total	65	100

Question 8 was included for the purpose of identifying what type of an impact the global economy has had on injection molding companies in the states of Minnesota, Wisconsin and Illinois. The results clearly indicate that there has been a significant loss of sales dollars for these particular companies. If we exclude the 0-10% sales loss, and assume these were all a 0% loss, we would still be looking at a total of 28 companies or 43% of all companies who returned survey results, that have lost anywhere from 11% up to 50 % of their overall outgoing sales in the last calendar year.

Table 9: Main reason for loss of sales to global competition

<i>Main reason for loss of sales to global comp.</i>	<i>Number</i>	<i>Percentage</i>
Competitive pricing	44	67.7
Not applicable	11	16.9
Proximity of customer	6	9.2
Other	4	6.2
Total	65	100

Question 9 was included to define the main reasons for loss of sales dollars due to global competition. The results of this question make it quite clear that loss of sales due to competitive pricing issues has had the greatest impact. A small number of companies reported that their customers had moved offshore and wanted suppliers who were in close proximity to their operations as another main reason for loss of sales. The results of this

question also lead us to believe that more companies are truly being affected by the global economy, as only 11 respondents or 16.9% marked this question as not applicable. All others reporting, listed specific reasons for reporting loss of sales due to global competition.

Table 10: Company sales affected by global manufacturing

<i>How have your company sales been affected by global mfg.?</i>	<i>Number</i>	<i>Percentage</i>
Decreased	38	58.5
Increased	10	15.4
Not Applicable	17	26.2
Total	65	100

Question 10 was included to define the overall impact global manufacturing has had on injection molding companies surveyed. The results indicate that the majority, 38 companies or 58.5%, have seen sales decrease as a result of global manufacturing competition. On the positive side, there were 10 companies or 15.4%, reporting an actual increase in overall company sales.

Table 11: Company downsized due to competition from global manufacturing sources

<i>Has your company downsized due to competition from global mfg. sources?</i>	<i>Number</i>	<i>Percentage</i>
Yes	24	36.9
No	41	63.1
Total	65	100

Question 11 focused on the number of companies that were forced to downsize due to declining sales. Twenty four companies, or 36.9%, reported that their respective companies had to downsize due to competition from global manufacturing sources. This number is smaller than the total 38 companies who reported a decrease in overall sales dollars. This is indicative of the level or impact that the decreased sales levels have had

on the respective companies that responded to the survey. Some companies may have supplemented their sales with other market niches in order to prevent having to downsize.

The results of the open ended question 15, which will be reported on later, should give some specific insight into what companies are doing to prevent or react to competition from global manufacturing sources.

Table 12: Outsource of any manufacturing to countries outside of the United States

<i>Has your company outsourced any of its mfg. to countries outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	17	26.2
No	48	73.8
Total	65	100

Question 12 was included to identify if any companies surveyed had outsourced any portion of their manufacturing to countries outside of the United States to remain competitive. The results indicate over one quarter or 17 companies and 26.2 percent have outsourced some of their manufacturing to countries outside of the United States.

Table 13: Increase of purchased raw material from countries outside of the United States

<i>Has your company increased its purchase of raw materials from countries outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	25	38.5
No	40	61.5
Total	65	100

Question 13 parallels question 12 but focuses on how the companies surveyed are themselves looking at their purchases from companies outside of the United States. The results for this question are very similar to question 12 with 25 companies or 38.5 percent indicating they have increased their purchases for raw materials from countries outside of the United States.

Table 14: Reasons for purchasing more raw materials from countries outside of the United States

<i>If applicable, what are the reasons for purchasing more raw materials from companies outside of the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Lower cost	27	41.5
Only supplier available	5	7.7
Not applicable	33	50.8
Total	65	100

Question 14 was included to help identify if the reasons for companies to purchase more raw materials from countries outside of the United States was similar to the reasons that they themselves were losing business to companies outside of the United States. The results to this question indicate the number one reason is identical and it is lower cost. Twenty seven respondents or 41.5 percent indicate the reason for purchasing from business outside of the United States is due to lower cost. It should be noted that more respondents gave reasons for purchasing from outside companies than those that actually said they had seen an increase. Twenty five respondents said they had increased their purchases while a total of 33 actually gave reasons for purchasing more raw materials from outside of the United States.

Chapter V: Discussion

Summary, Conclusions and Recommendations

The focal point of this study was to understand the Global Economy and what impact if any, it may be having on injection molding companies in the states of Minnesota, Wisconsin and Illinois. This chapter will include a summary of the findings as well as final conclusions based upon a review of the data collected along with recommendations as a result of the study.

Summary of study procedures

The purpose of this study was to understand how injection molding companies in the states of Minnesota, Wisconsin and Illinois are being affected by the global economy and what actions if any they may be taking to compete in this new marketplace. The study began with an introduction describing why the study was needed. Next, the paper covered a review of literature related to the global economy and its impacts on companies in the United States in general, as well as how it is impacting injection molding companies in the states of Minnesota, Wisconsin and Illinois. Chapter three continued describing the methodology utilized in the study, subject selection, instrumentation, data collection procedures, data analysis and limitations of the study.

The population of this study consisted of 412 companies specializing in injection molding specifically in the states of Minnesota, Wisconsin and Illinois. A random selection process was utilized to select a sample of 200 companies from the total population of 412 companies. A one page survey was constructed focusing on questions related to what impact the global economy has had on their respective business, as well as what actions were being taken or planned for the near term future to react to the effects of

the global economy. The survey was mailed to the top executives of each of these companies along with a cover letter and return envelope. There was total of 92 surveys out of the total 200 sent that were actually returned. Of the 92 returned 23 of them were returned as undeliverable and 4 were returned indicating the business was not in manufacturing, but were only focused on sales, marketing or distribution. Useable information was obtained from 65 respondents which represents a 32.5 % useable return rate from the initial sample of companies that were selected to participate. The summary of findings from the 65 companies was tabulated and presented in a summary table format along with supporting statistical data and graphing in the appendices.

Limitations

The results of this study represent only a small percentage of manufacturers in the states of Minnesota, Wisconsin and Illinois. Different industry types were not segregated and therefore the results cannot be analyzed based upon any certain industry type within injection molding companies. Specific questions for the survey allowed responses only within a given range. Respondents were not asked for specific detail or numbers, but only to categorize their facts within a given range to allow for an overall summary of findings. Specific detail is not available and the survey instrument was not designed to capture this level of detail.

Conclusions

The focus of this paper was to determine what impact, if any, the global economy is having on injection molding companies in the states of Minnesota, Wisconsin and Illinois. After reviewing the data that was gathered from the survey respondents, the data collected clearly shows that 56.9% of the companies responding have seen a loss of sales

in the range of 0-10% due to the global economy. Another 27.7% reported a sales loss of 11-20% during the last calendar year, leaving a cumulative effect of lost sales in the 84% range. In addition, 58.5% of the respondents reported sales level decreases, while only 15.4% reported sales increases during the last calendar year. Interestingly, 63.1% of respondents have also reported downsizing has occurred within their company as a result of the global economy. Of the companies reporting a loss in sales, 67.7% reported the reason for loss of sales as being more competitive pricing. Based upon the data, it appears that a very limited number of companies are using a business model of outsourcing their manufacturing to compete on price. Twenty six point two percent of all companies responding, reported their companies had outsourced some portion of their manufacturing to countries outside of the United States. Approximately the same percentage of companies has also increased their purchase of raw materials for production from countries outside of the United States, with 38.5% reporting an increase in these types of purchases. The results of the findings of this study correlate very closely with the literature review that was performed. The literature review indicates an ongoing loss of business due to lower costs for injection molding companies in Minnesota, Wisconsin and Illinois. The results of the survey indicate the same patterns and reasons for loss of sales. The survey results indicate that global competition may be having a greater impact than what the literature review had stated or predicted. The main reasons for loss of sales were due to more competitive pricing and this is exactly what the survey respondents are reporting. The last question of the survey was an open ended question and the results are summarized in the appendices. When reading through these responses on how companies are reacting or adjusting to global competition it is evident that they are doing exactly

what the literature review would suggest and that is not focusing on simple commodity type molding. More and more companies reported that they are specializing in a particular niche, be it short run molding, focus on design services, or other strengths to grow their business. The business models of these companies are changing as a result of how the global economy is affecting what was once a strong business model. As was stated in the beginning of this research, today's marketplace is ever-changing and expanding and the strong companies are those that will understand and adjust their business models to the ever changing economy and marketplace.

Recommendations

If U.S. Manufacturing firms are to remain viable and competitive, they must react to the global economy and the resulting marketplace conditions. Companies must reevaluate their current business plans to ensure they remain competitive with the ever changing conditions in the marketplace that they are forced to encounter. Government should also clearly look at the results of what is happening to our economy and ensure that fair trade restrictions are being implemented and enforced. The world trade organization and N.A.F.T.A are simple examples of programs the government has implemented in order to improve the economy and business conditions. What may have been a good idea in the beginning now appears to be creating a less than ideal condition for our U.S. economy. A complete review of our regulations and what makes us competitive should be enacted. We will always be forced with reacting to changing conditions. What we must ensure is that we are reacting and not leading our country to be a complete service based economy.

Recommendations for Future Research

It is recommended that future research obtain more specific information on some of the survey questions by better defining smaller ranges or perhaps pose as open ended questions. Some of the specific questions, such as what percentage of sales were lost to competition from global sources, could have been better defined leaving 0% as a single option rather than combining it within a range of 0-10%. An alternative method for obtaining a population of manufacturing companies in the states of Minnesota, Wisconsin and Illinois could also be pursued. Of the survey sample of 200 companies, at least 4 of them were returned as not actually being manufacturing companies but sales and or distribution companies. Another downfall was that 11.5% of the total sample had their survey questionnaire returned because they were either out of business or had moved and not left a forwarding address. Perhaps this is indicative of the number of companies being impacted by the economy and no longer being in existence? This would be an assumption without any scientific data to support in the research. It is suggested that future research also focus on whether the companies that are being affected the most are companies that have not changed their overall operating or business plans to react to the changing economy.

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Appendix A
Survey Instrument



This project has been reviewed by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46



The impact of Global Manufacturing on Injection molding companies in MN, WI, and IL

1. How long has your company been in existence?

Select at least 1 response and no more than 1 response

- ☐ 0-10 Years
- ☐ 11-20 Years
- ☐ 21-30 Years
- ☐ 31-40 Years
- ☐ 41+ Years

2. Which general category best describes the products that you produce?

Select at least 1 response and no more than 1 response

- ☐ Custom
- ☐ Precision
- ☐ Medical
- ☐ Automotive
- ☐ Thermo set
- ☐ Appliance
- ☐ Clean room
- ☐ Other – Please specify

3. What percentage of your overall sales dollars were exported outside of the United States during the last calendar year?

Select at least 1 response and no more than 1 response

- ☐ 0-10%
- ☐ 11-20%
- ☐ 21-30%
- ☐ 31-40%
- ☐ 41-50%
- ☐ Over 50%

4. Does your company currently have manufacturing presence outside of the United States?

- ☐ Yes
- ☐ No

5. Does your company have plans to develop manufacturing presence outside of the United States within the next 5 years?

- ☐ Yes
- ☐ No

6. Does your company have sales and marketing presence outside of the United States?

- ☐ Yes
- ☐ No

7. Does your company have plans to develop sales and marketing outside of the United States in the next 5 years?

- ☐ Yes
☐ No

8. What percentage of your outgoing sales were lost to competition from global manufacturing in the last calendar year?

Select at least 1 response and no more than 1 response

- ☐ 0-10%
☐ 11-20%
☐ 21-30%
☐ 31-40%
☐ 41-50%
☐ 50% plus

9. What was the main reason for loss of sales to global manufacturing competition?

Select at least 1 response and no more than 1 response

- ☐ Improved quality provided by competition
☐ More competitive pricing offered by competition
☐ Improved delivery provided by competition
☐ Improved customer service provided by competition
☐ Proximity of manufacturing location to customer
☐ Not applicable – No loss in sales
☐ Other, Please specify

10. How have your company sales been affected by global manufacturing?

- ☐ Increased
☐ Decreased
☐ Not affected

11. Has your company downsized due to competition from global manufacturing sources?

- ☐ Yes
☐ No

12. Has your company outsourced any of its manufacturing to companies outside of the United States?

- ☐ Yes
☐ No

13. Has your company increased its purchase of raw materials from countries outside of the United States?

- ☐ Yes
☐ No

14. If applicable, what are the reasons for purchasing more raw materials from companies outside of the United States?

Select at least 1 response

- ☐ Lower Cost
☐ Improved Quality
☐ Improved Delivery
☐ Shorter Lead Times
☐ Only Supplier available

15. What actions is your company taking, if any, to better compete in the global economy?

Thank you for your participation!

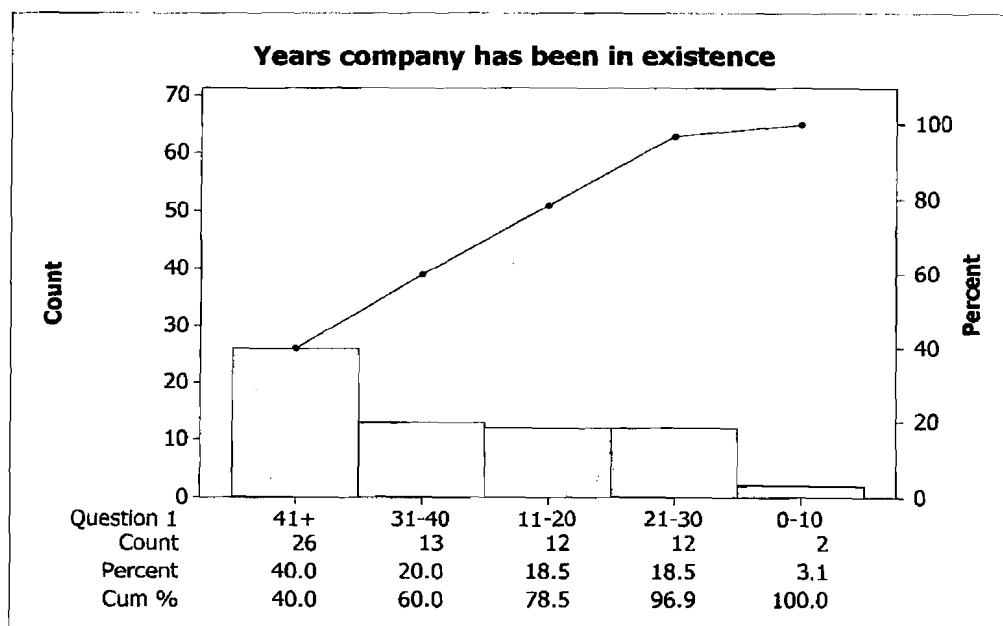
Appendix B

Tables and Graphs

Question 1 – Table Summary of years the company has been in existence

<i>Years in Business</i>	<i>Number</i>	<i>Percentage</i>
0-10	2	3.1
11-20	12	18.5
21-30	12	18.5
31-40	13	20.0
41 +	26	40.0
Total	65	100

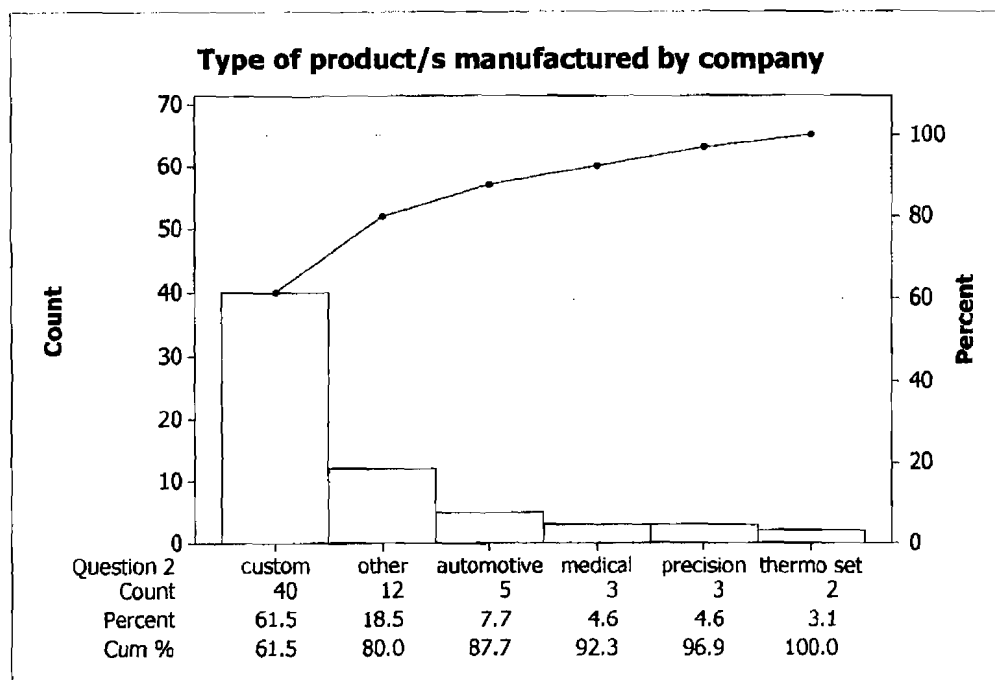
Question 1 – Pareto chart of years the company has been in existence



Question 2 – Table summary of type of manufacturing performed

<i>Type of Product</i>	<i>Number</i>	<i>Percentage</i>
Custom	40	61.5
Other	12	18.5
Automotive	5	7.7
Medical	3	4.6
Precision	3	4.6
Thermo set	2	3.1
Total	65	100

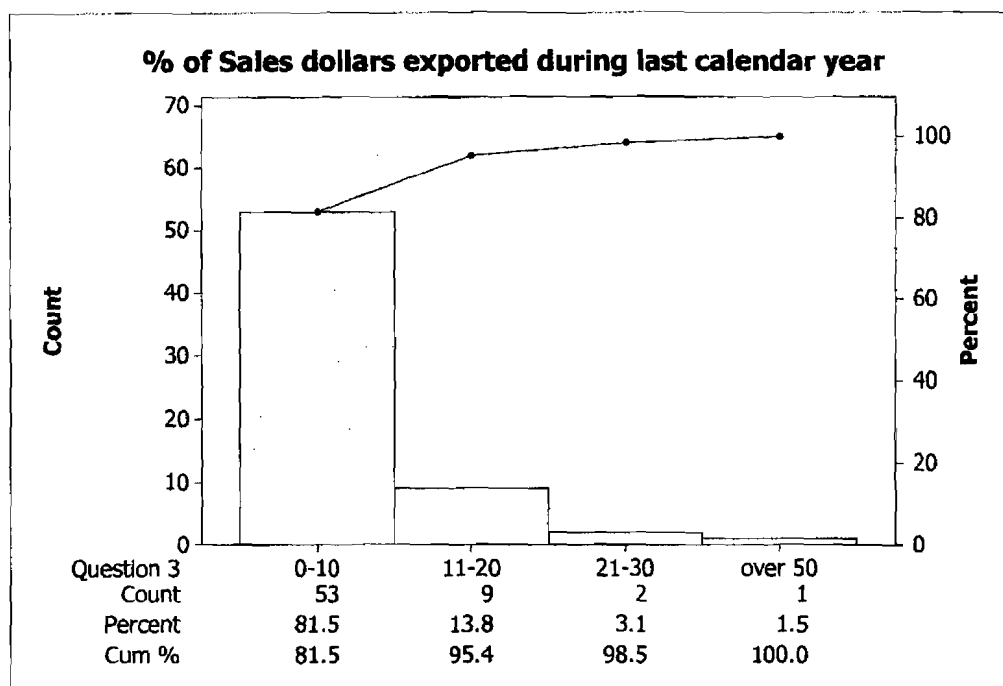
Question 2 - Pareto chart of type of manufacturing performed



Question 3 – Table summary of percentage of sales dollars exported during last calendar year

<i>% Sales dollars exported</i>	<i>Number</i>	<i>Percentage</i>
0-10	53	81.5
11-20	9	13.8
21-30	2	3.1
Over 50	1	1.5
Total	65	100

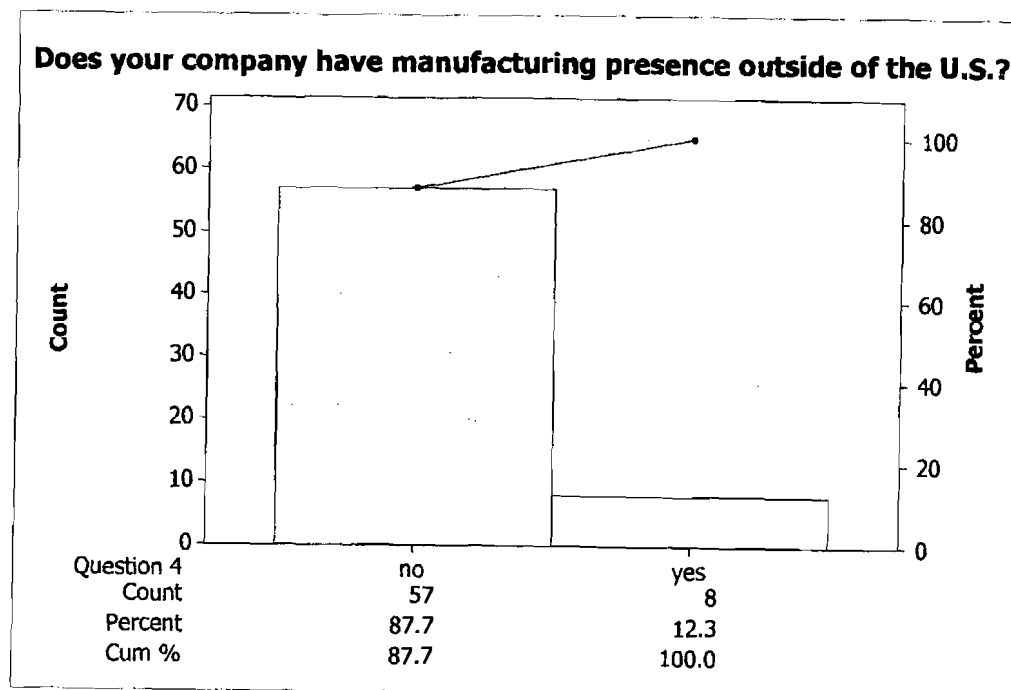
Question 3 – Pareto chart of percentage of sales dollars exported during last calendar year



Question 4 – Manufacturing presence outside of the United States currently?

<i>Mfg. presence outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	8	12.3
No	57	87.7
Total	65	100

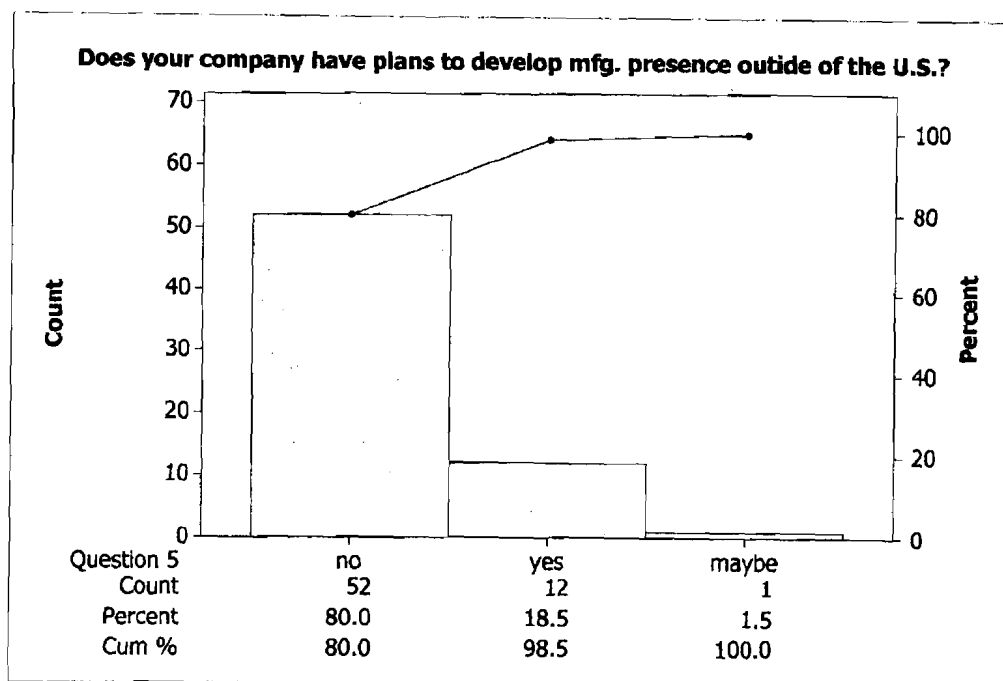
Question 4 – Pareto chart of manufacturing presence outside of the United States



Question 5 - Table summary of whether there are plans to develop manufacturing presence outside of the United States in the next 5 years

<i>Plans to develop mfg. presence outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	12	18.5
No	52	80.0
Maybe	1	1.5
Total	65	100

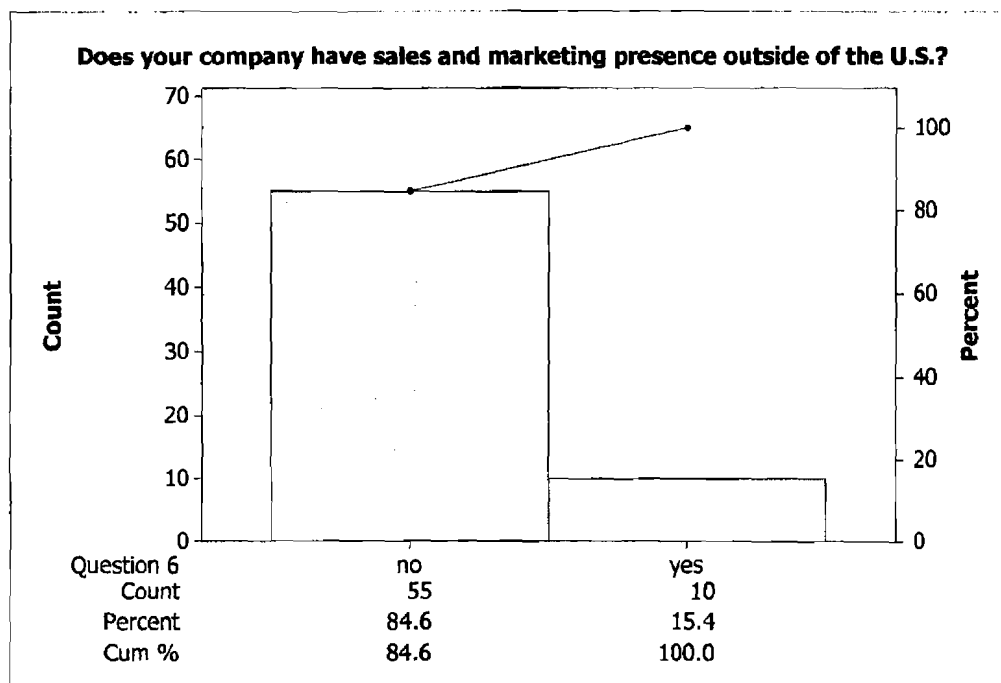
Question 5 – Pareto chart of whether there are plans to develop manufacturing presence outside of the United States in the next 5 years.



Question 6 – Table summary of sales and marketing presence outside of the United States currently?

<i>Sales and Mktg. presence outside of the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	10	15.4
No	55	84.6
Total	65	100

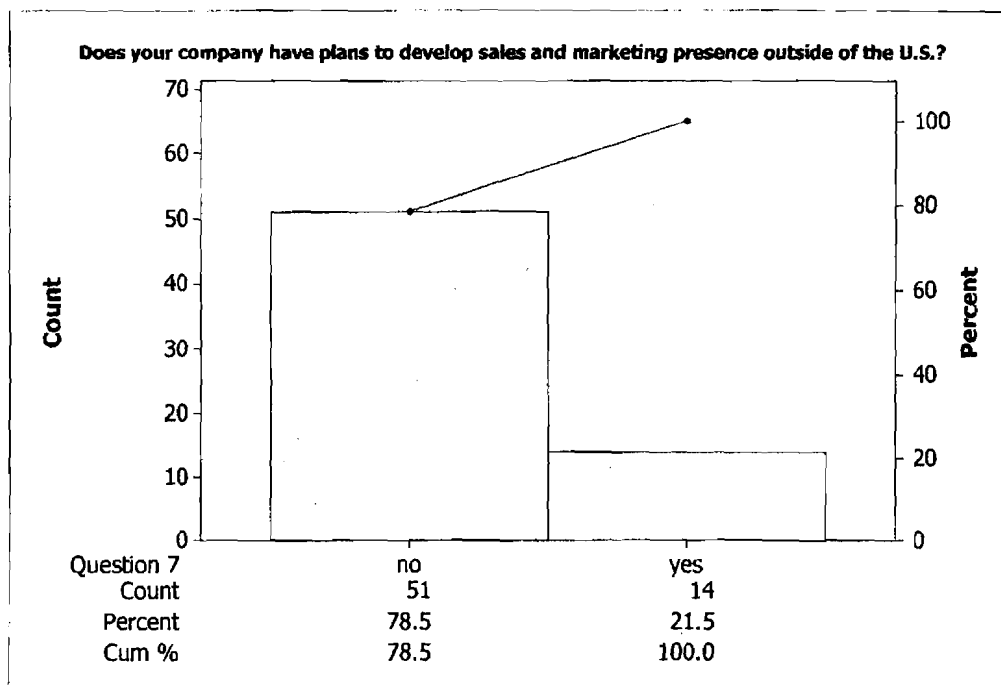
Question 6 – Pareto chart of sales and marketing presence outside of the United States



Question 7 - Table summary of whether there are plans to develop sales and marketing presence outside of the United States in the next 5 years

<i>Plans to develop sales and mktg. presence outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	14	21.5
No	51	78.5
Total	65	100

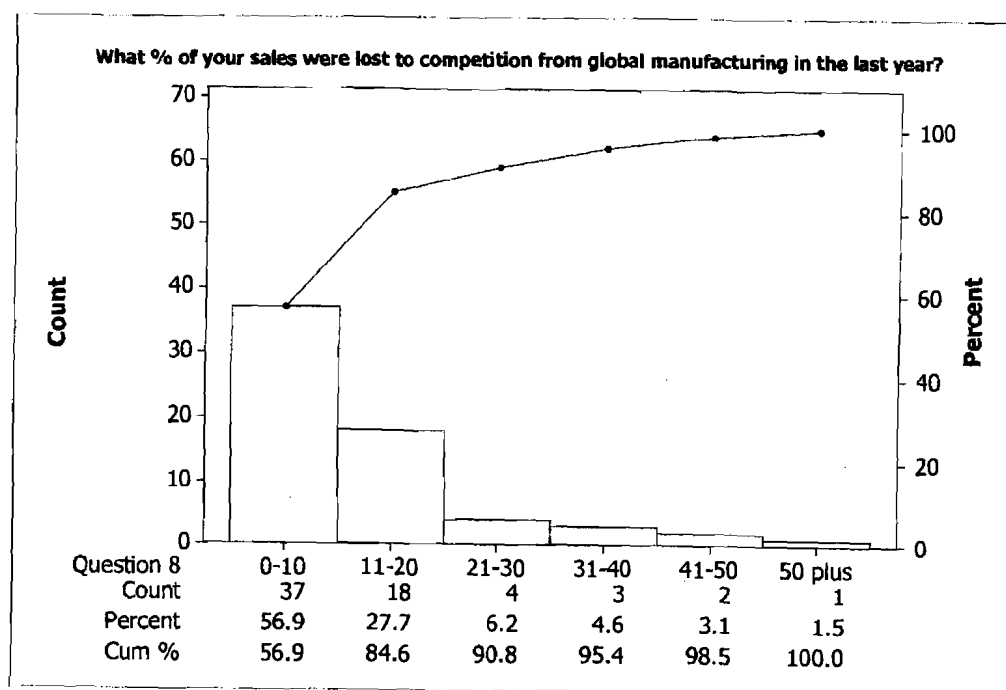
Question 7 – Pareto chart of whether there are plans to develop sales and marketing presence outside of the United States in the next 5 years



Question 8 – Table summary of % of sales lost due to competition from global manufacturing in the last calendar year

<i>% Sales lost to comp. from global mfg.</i>	<i>Number</i>	<i>Percentage</i>
0-10	37	56.9
11-20	18	27.7
21-30	4	6.2
31-40	3	4.6
41-50	2	3.1
50 plus	1	1.5
Total	65	100

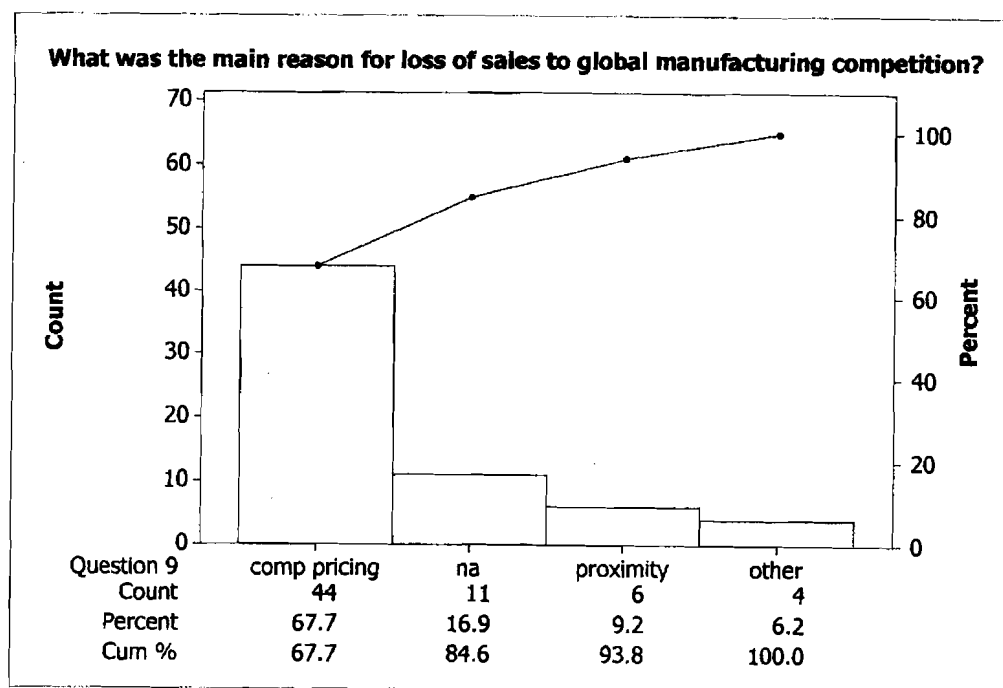
Question 8 – Pareto chart of % of sales lost due to competition from global manufacturing in the last calendar year



Question 9 – Table summary of main reason for loss of sales to global manufacturing competition

<i>Main reason for loss of sales to global comp.</i>	<i>Number</i>	<i>Percentage</i>
Competitive pricing	44	67.7
Not applicable	11	16.9
Proximity of customer	6	9.2
Other	4	6.2
Total	65	100

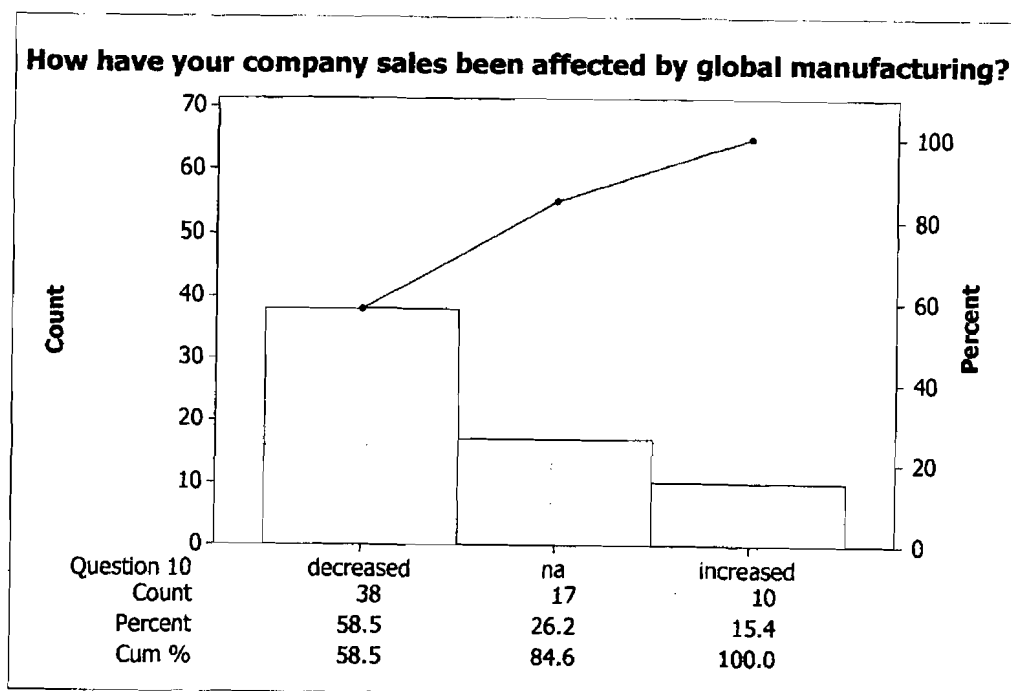
Question 9 – Pareto chart of main reason for loss of sales due to global manufacturing competition



Question 10 – Table summary of how company sales have been affected by global manufacturing

<i>How have your company sales been affected by global mfg.?</i>	<i>Number</i>	<i>Percentage</i>
Decreased	38	58.5
Increased	10	15.4
Not Applicable	17	26.2
Total	65	100

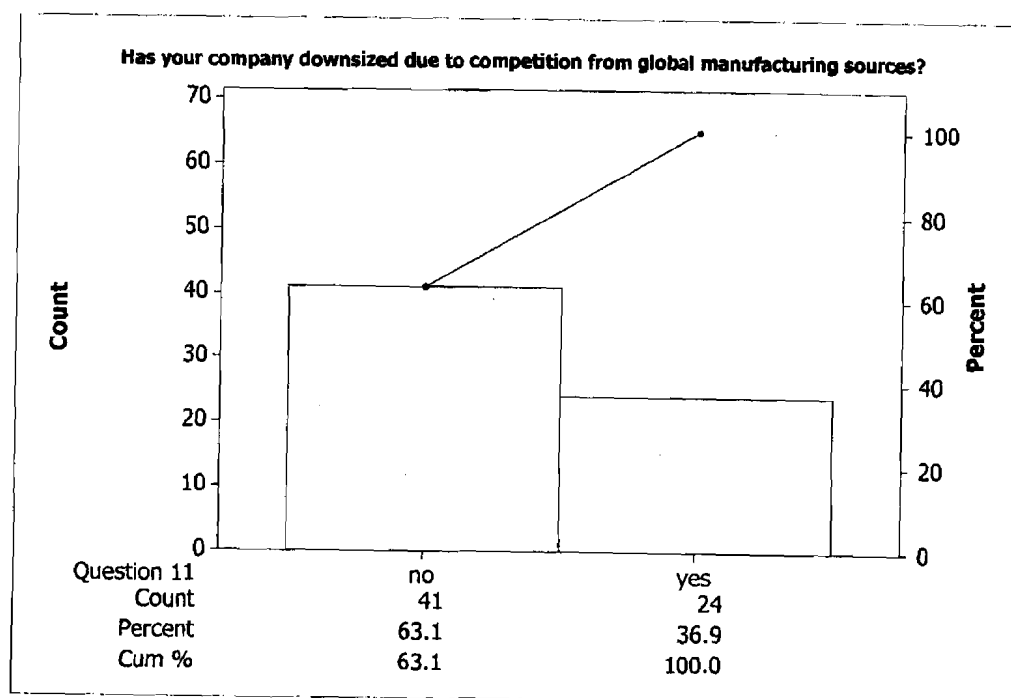
Question 10 – Pareto chart of how company sales have been affected by global manufacturing



Question 11 – Table summary of has your company downsized due to competition from global manufacturing sources

<i>Has your company downsized due to competition from global mfg. sources?</i>	<i>Number</i>	<i>Percentage</i>
Yes	24	36.9
No	41	63.1
Total	65	100

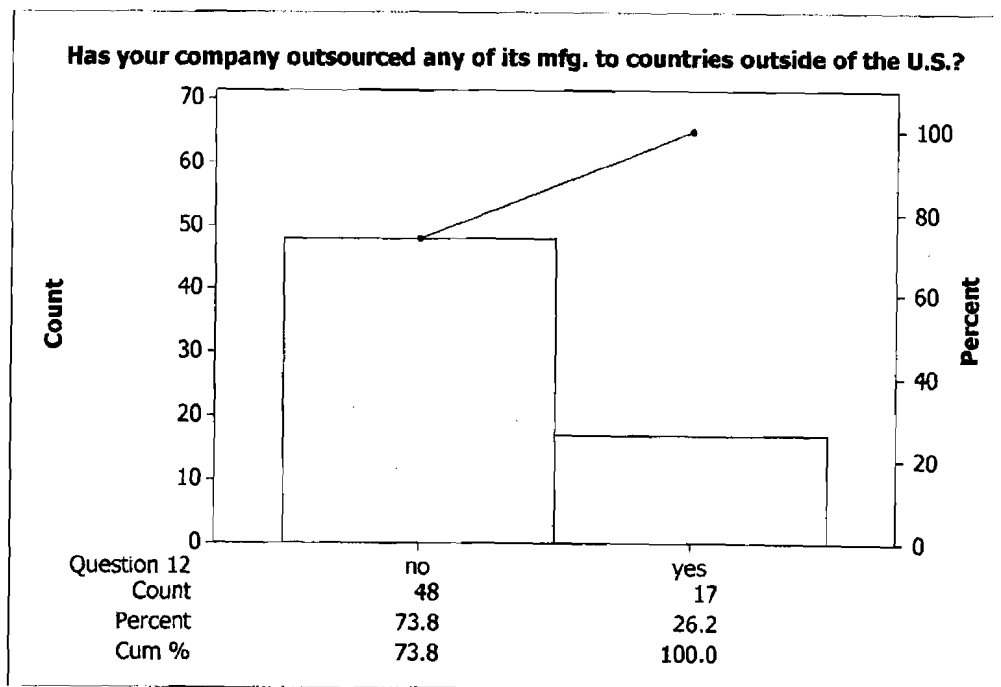
Question 11 – Pareto chart of has your company downsized due to competition from global manufacturing sources



Question 12 – Table summary of has your company outsourced any of its manufacturing to companies outside of the United States

<i>Has your company outsourced any of its mfg. to countries outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	17	26.2
No	48	73.8
Total	65	100

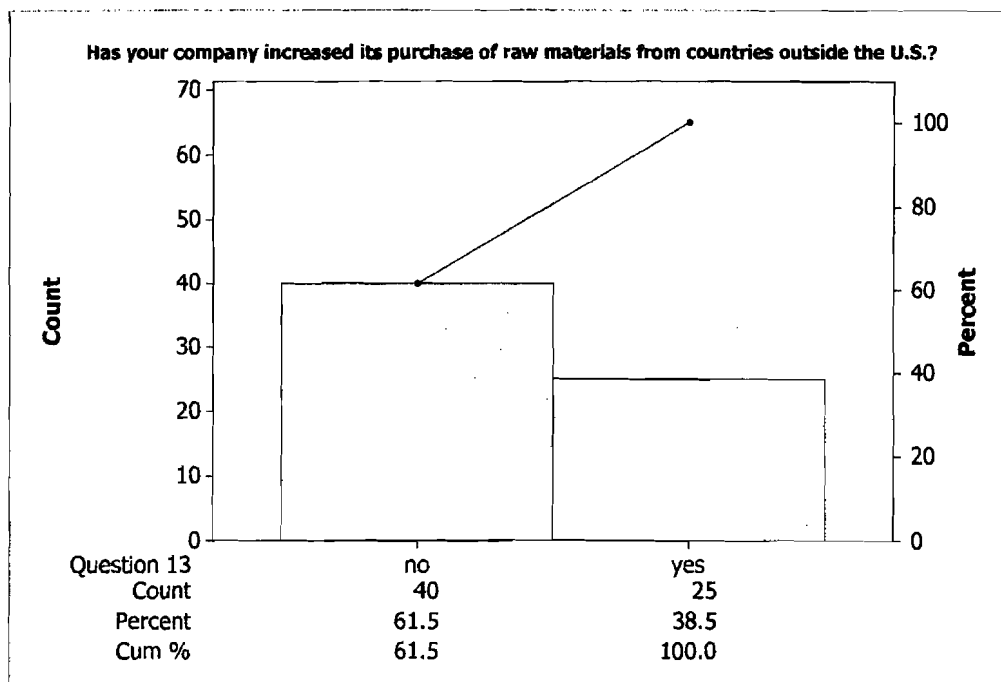
Question 12 – Pareto chart of whether your company has outsourced any of its manufacturing to companies outside of the United States



Question 13 – Table summary of whether your company has increased its purchase of raw materials from countries outside of the United States

<i>Has your company increased its purchase of raw materials from countries outside the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Yes	25	38.5
No	40	61.5
Total	65	100

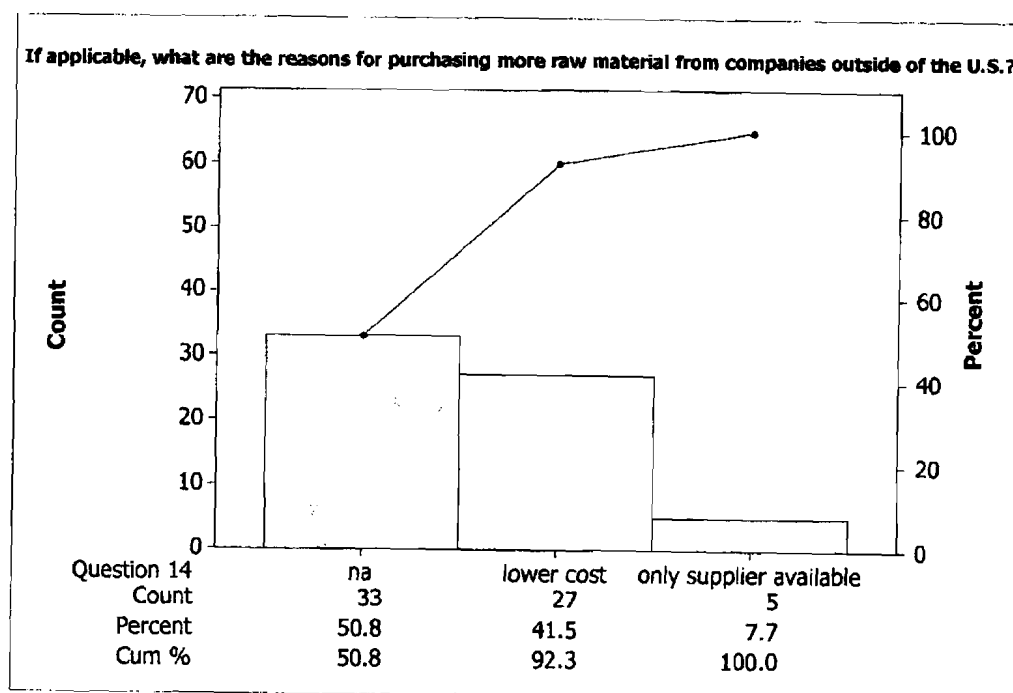
Question 13 Pareto chart of whether your company has increased its purchase of raw materials from countries outside of the United States



Question 14 – Table summary of reasons for purchasing more raw materials from companies outside of the United States

<i>If applicable, what are the reasons for purchasing more raw materials from companies outside of the U.S.?</i>	<i>Number</i>	<i>Percentage</i>
Lower cost	27	41.5
Only supplier available	5	7.7
Not applicable	33	50.8
Total	65	100

Question 14 Pareto chart of reasons for purchasing more raw materials from companies outside of the United States



Appendix C: Results of open ended question 15

Question 15: What actions is your company taking, if any, to better compete in the global economy?

Response to open ended question 15
Improve manufacturing process and automation
Focus on small to mid size companies that want to have work in the U.S.A
Producing small quantities and shorter lead times
Developing knowledge management and human systems to improve productivity/automation
Production facilities in Mexico, El Paso, Texas and Singapore
Extreme automation
Thinking about putting up for sale
Make sure quality is top level/ become more efficient in manufacturing methods
Voting against unrestricted free trade, lowering pay, not upgrading equipment, laying off workers
Increase sourcing of raw material from off shore, focus on distribution rather than manufacturer
Spend more time marketing
Begin using off shore sources for molds
Automation
Focus on niche to become specialty molder, more engineering for our customers, more consignment inventory
Looking at near shore contract assembly, using China toolmakers to reduce tooling cost, sourcing metal components for products from Asian sources, considering off shore manufacturing options
Focus on contract manufacturing, take projects others reject and never say no
More efficient, very service oriented to customers, working leaner, Great service and prices
Do away with NAFTA and SPP, support new american
Invest heavily in new capital,
Purchase of tooling overseas, focus on niche which is to run short lead time jobs, focus on inventors and entrepreneurs, focus on relationships and partnerships
Focus on smaller runs as a niche
Lean manufacturing techniques, high response and fast delivery, ship to stock programs
Looking at alliance and joint ventures to facilitate global expansion
Automation and lean initiatives
Reduce costs daily, improve quality, better service and support
Focus on innovation and technology, invest in innovation, expansion of international footprint
Improving quality and productivity, upgrading equipment and moving towards automation
Hard work, more efficient, newer equipment when affordable, prayer
Alliance with China company

Narrow focus, increase volume concentration with current customers, development of niche product lines
Implementing lean manufacturing, developing relationships with off shore tooling companies
Not sure
Strategic acquisition, resources in far east for import business growth
Diversification into other markets outside the Auto industry
Opening on line retail store, Potential purchase of products from overseas sources due to pricing
Expansion of manufacturing to Mexico, More effective sourcing of mold and raw materials, aggressive leaning of U.S. operations
Require employees to do more, increase productivity and continuously streamline our manufacturing
Diversification of product line, become more lean and automate while focusing on quality and shorter lead times
Focus on short run molding, focus on quality and productivity through continuous improvement initiatives
Automation, improved technology and evaluation of some off shore manufacturing
Buying faster equipment, implementing new systems and procedures
Nothing 3 respondents
Improved efficiencies/closer coordination, better service , faster response
Invest in automation and focus on lean practices
Automation and Overseas tooling sources
Low volume / Large part production
Creation of third party sourcing and distribution
Automation/in mold assembly and short run production
No response – 13 respondents