Lahore School of Economics

Technology Management & Innovation Centre

INNOVATION AND TECHNOLOGY IN THE TEXTILE SECTOR OF LAHORE 2019

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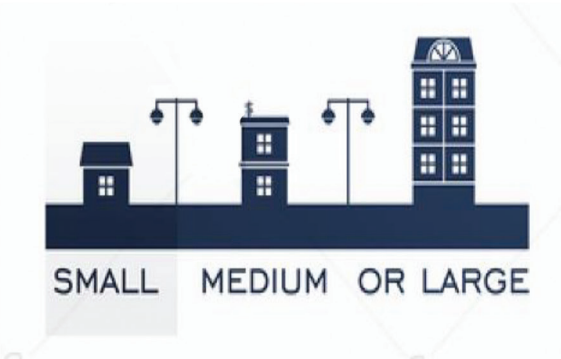
RESULTS AT A GLANCE

Out of 125 firms surveyed, **73%** were involved in manufacturing

Out of 125 firms surveyed, **26%** were involved in the readymade garments sector.

Looking at the size of firms surveyed, the majority of the firms were categorized as large sized firms **(50%)**, a significant proportion as medium sized firms **(34%)** and a smaller number as small sized firms **(16%)**.



88%

of firms reported that they innovated i.e. purchased new machinery and/or software.

Looking sector wise, almost **90%** of firms in both the RmG and textile sectors said that they purchased new machinery.

50%

of firms already innovating claimed that they were planning to introduce a new technology again in the next 12 months.

57% of textile firms said that they were planning to introduce a new technology in the next 12 months.

60%

of readymade garment sector firms were not planning to innovate in the next 12

81%

Of firms reported that they adopted already established machinery/software.

75%

of the innovating firms claimed to have purchased the technology/equipment from abroad.

When asked if they preferred making or buying new innovations, **81%** of firms reported that preferred buying innovations. Whereas, amongst the firms who preferred making new innovations almost **80%** were large-sized firms.

Looking sector-wise, **81%** of readymade garment sector firms and **79%** of textile sector firms preferred buying already established innovations.

In response to the question about who was responsible for introducing new technologies, about half of the firms reported that they initiated innovations themselves.

Out of the total respondents, **70%** of firms were exporters.

Looking sector-wise, **76%** of textile firms were exporters.

40%

of exporting firms said exported goods were a majority of their output.

About half of the exporters exported to Europe and Asia.

The survey found that exporters tended to be more innovative than non-exporters. The data showed that **92%** of exporting firms were involved in innovation/technology upgradation.

When asked about the most significant driving innovation in their industry, almost half of the firms reported pressure to increase quality was one of the most significant drivers of initiating innovation.

30%

of firms said that the desire for market leadership was the second most significant factor driving innovation.

Looking sector-wise, **60%** of readymade garments sector firms and **40%** of textile sector firms reported that increasing quality of their products was the most significant driving factor for their specific industries.

82%

of firms reported that they introduced a new product.

80%

of firms introduced new marketing strategies.

76%

Of firms introduced new processes in their firms.

73%

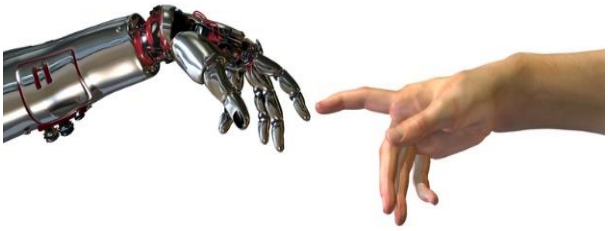
of firms introduced new technology to their firms.

35%

of firms introduced a new business model to their firms.

55%

of firms reported that innovation in product and **29%** reported that innovation technology/equipment resulted in higher profits.



85%

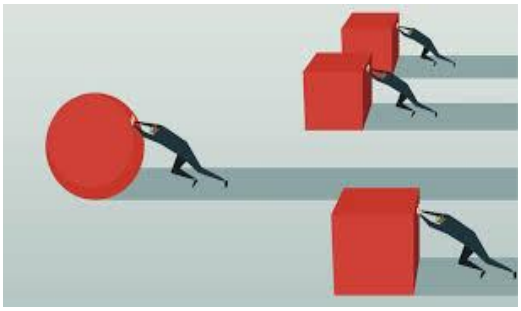
of firms said that innovation was aimed at improving quality of products.

65%

of firms said that their innovation was aimed at higher revenues.

Looking sector-wise, innovation led to improved quality of products for both **87%** of textiles and **79%** of readymade garments firms.

In our sample, when asked about the barriers faced while trying to perform technological innovations, the two greatest barriers faced by the firms were financing and lack of innovation opportunities.



79%

of firms said that they did not have to retrain their employees in order to adopt the new technologies/software and **89%** claimed to have faced no resistance from their employees when trying to introduce innovation.

In our sample, when asked about the sources of funding for innovations, **42%** of firms reported that those innovations were financed by their internal resources only (equity funds). Whereas, **53%** said that their innovations were financed by using their internal sources as well as taking loans from the banks, while only **4%** said that their innovations were financed using internal resources and aid from the government.

Looking at sources of funding for innovation across sectors, most of the garments manufacturing firms used self-financing whereas, almost half of the textile manufacturing firms financed their innovation activities with the assistance of financial institutions.

INTRODUCTION

Productivity growth is critical for long term economic growth. A critical component of productivity growth is innovation and this is usually a major problem in developing countries. The Innovation and Technology Centre (ITC) of the Lahore School of Economics conducted a survey of textile manufacturers in the year 2018/2019 to observe the growing trends in the field of innovation and technology upgradation in the textile sector of Lahore. The purpose of this survey was to observe the extent, quality and impact of innovation activities on the performance and profitability of the innovating firms. The survey also looked at the barriers faced by the innovating firms in this region.

The data was collected from 125 firms involved in manufacturing readymade garments and textile sector during the period from September to December 2018. The firms were also characterized in terms of exporters and non-exporters in order to see the innovative behavior of each.

Some basic information on the surveyed firms is given below:

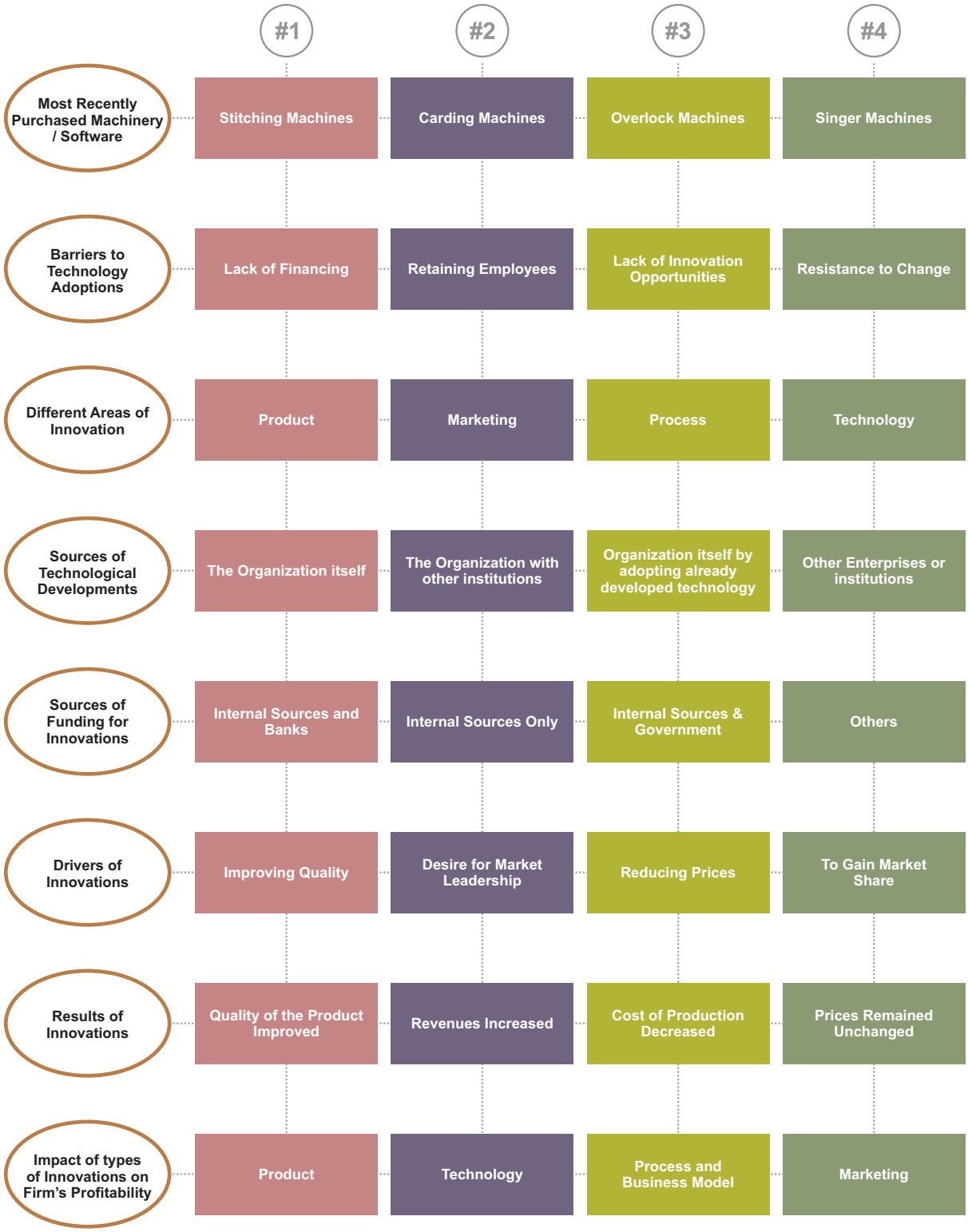
Sample Statistics:

Category	Total Firms	Small	Medium	Large
Number of firms	125	20	42	63
Exporters	87	6	29	52
Non-exporters	38	14	13	11
Textile firms	93	9	31	53
Readymade Garment firms	32	11	11	11
Innovating firms	110	17	32	61
Non-innovating firms	15	3	10	2

Analysis of Innovation Behavior in Firms

Top 4 most important factors: with 1 being the most important, 2 being the second most important and so on

All Firms



1 REVIEW OF TECHNOLOGICAL INNOVATIONS

In this first section of the survey, the firms were examined to review different aspects and quality of their innovation and technology upgradation.

1.1. Purchase of New Machinery

A simple measure of innovation is the purchase of machinery. Turning to the purchases of machinery by firms, it is useful to see what percentage of firms purchased new machinery:

A total of 110 firms (88%) reported that they innovated i.e. purchased new machinery and/or software. Looking sector wise, a majority of firms in both the sectors said that they purchased new machinery, and the percentage were similar across sectors.

Figure 1: Almost 91% of readymade garments manufacturing firms said that they purchased new machinery and/or software

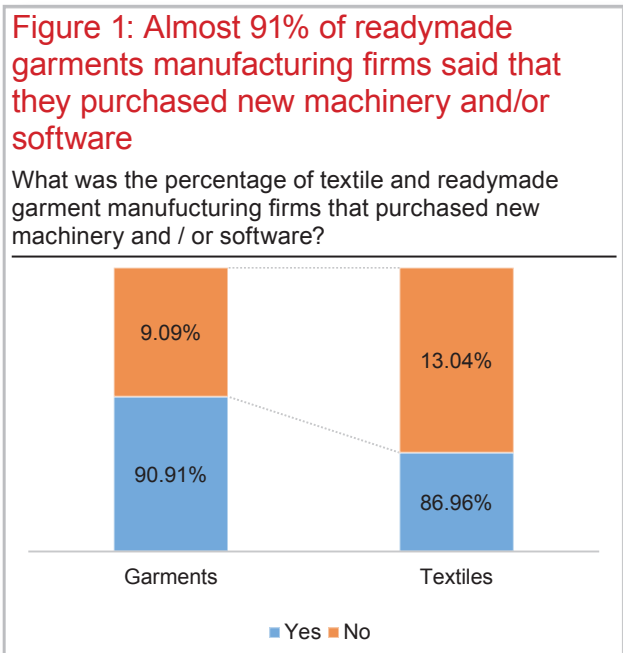
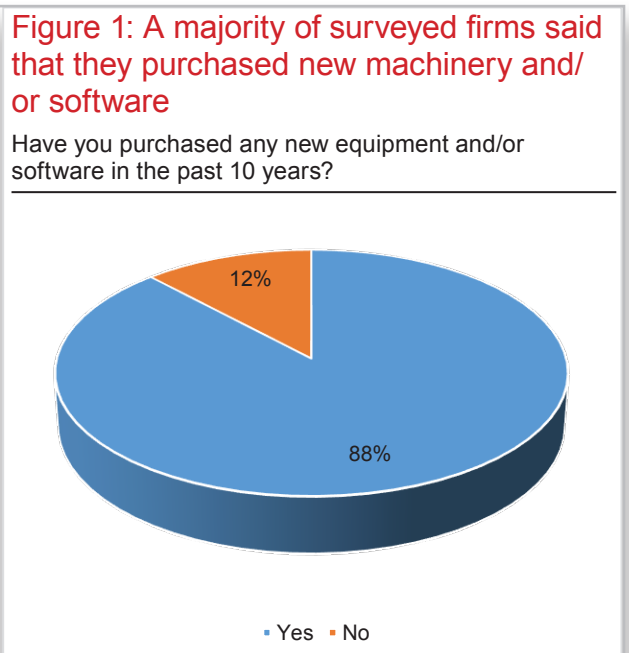


Figure 1: A majority of surveyed firms said that they purchased new machinery and/or software

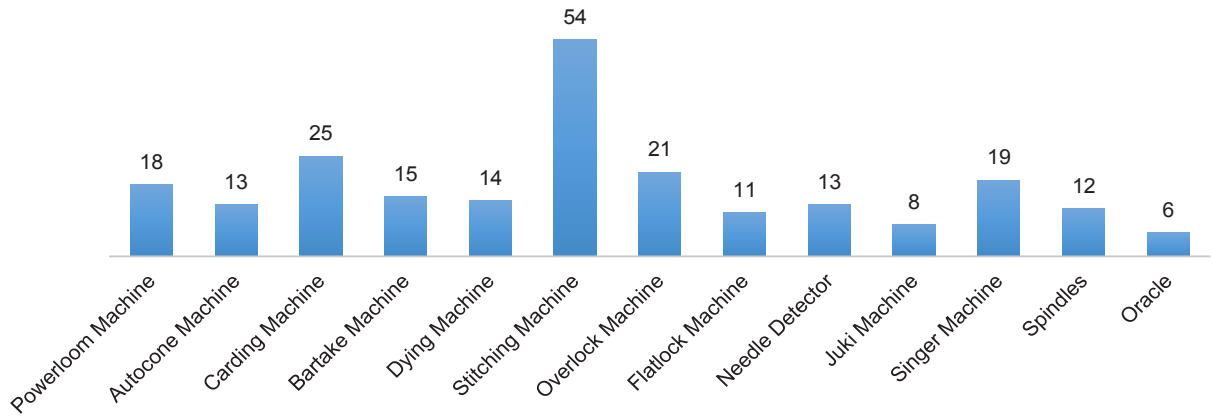


1.2. Types of Acquired Machinery/Equipment/ Software

When asked about the names of most recently acquired equipment/software, 54 firms purchased stitching machines, 25 reported to have bought carding machines, 21 bought overlock machines, 19 bought singer machines and 18 bought powerloom machines.

Figure 2: Overall, a majority of firms said that they purchased stitching machines (firms who purchased new machinery)

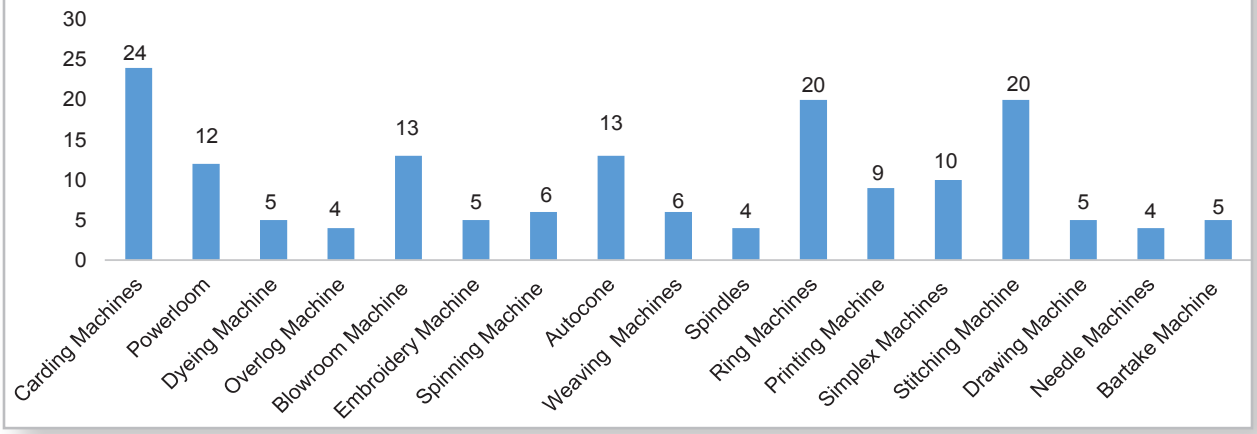
List the top 4 of your most recently purchased machinery and/or software?



When asked about how often the firms innovated in different types of innovation in the last 3 years, firms reported that they innovated in the areas of product (83%), marketing (77%), process (75%), technology (63%) and business model (33%).

Figure 2a: A majority of textiles manufacturing firms purchased Carding Machines, Ring Machines and Stitching Units

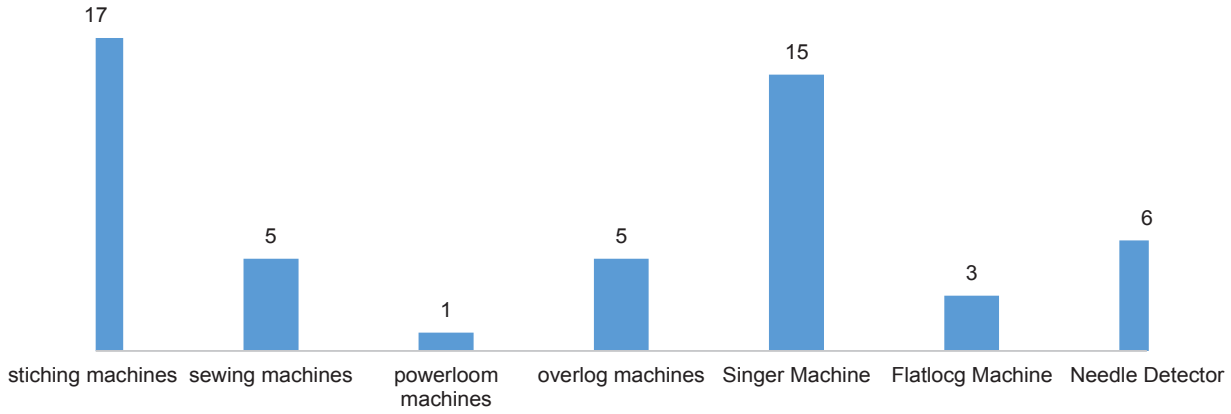
Most recently purchased machinery and/or software by textile manufacturing firms?



Looking sector-wise most machines purchased by textile manufacturing firms were Carding machines, Ring Machines and Stitching Machines.

Figure 2b: A majority of Garments Manufacturing Firms purchased Stitching Machines and Singer Machines

Most recently purchased machinery and/or software by readymade garments manufacturing firms?



Most machines purchased by garments manufacturing firms were stitching machines and Singer Machines.

1.3. Sources of Technology

Most of the respondent firms claimed to have purchased the technology/equipment from abroad (75%).

Figure 3: A Majority of textile manufacturing firms purchased new equipment/machinery and/or software from abroad as compared to garments manufacturing

Last 4 technologies purchased by textile and readymade garments manufacturing firms?

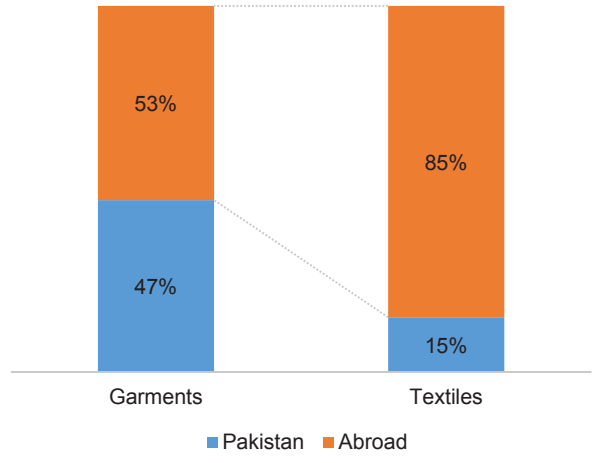
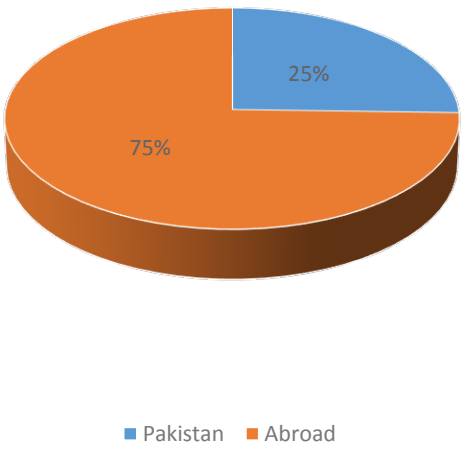


Figure 3: Of firms that purchased technology, a majority of them said that they purchased it from abroad

Where did you purchase this technology/ software from? (Last 4 Innovations)



1.4. Age of Technology

Figure 4: Of firms that purchased technology, the vintage of the technology was 1-5 Years

How many years ago did you purchase the last 4 technologies?

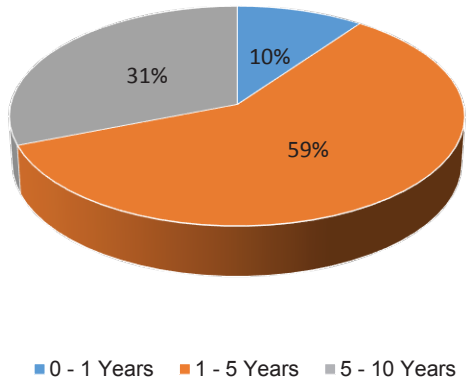
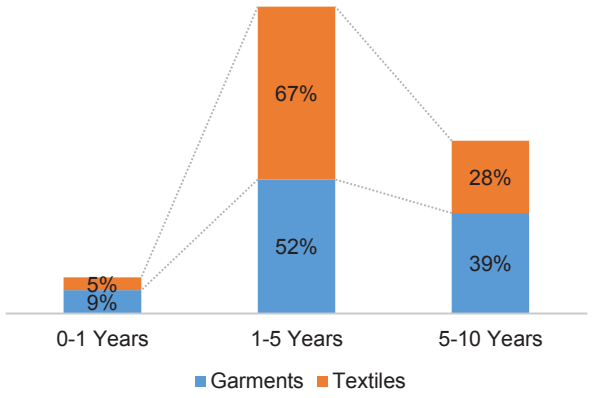


Figure 4: A greater number of textile and readymade garments manufacturing firms said that the last 4 machines and/ or so

How many years ago the last 4 technologies were purchased by textile and readymade garment manufacturing firms?



The timing of innovation is also important. In our sample, more than 50% of the firms said that this innovation took place in the last 1-5 years (59%).

1.5. State of the Art vs Already Established Technology

In developing countries, innovation can be adopted from other firms, from abroad or developed by firms on their own. In our sample, a significant number of firms (81%) reported that they adopted already established machinery/software.

Figure 5: Of firms that purchased technology, a majority of firms said it was already established

Were the last 4 technologies you purchased state of the art or already established?

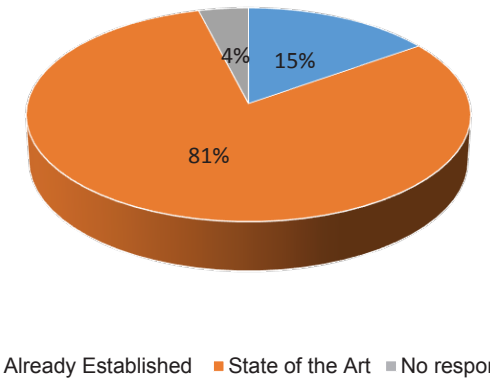
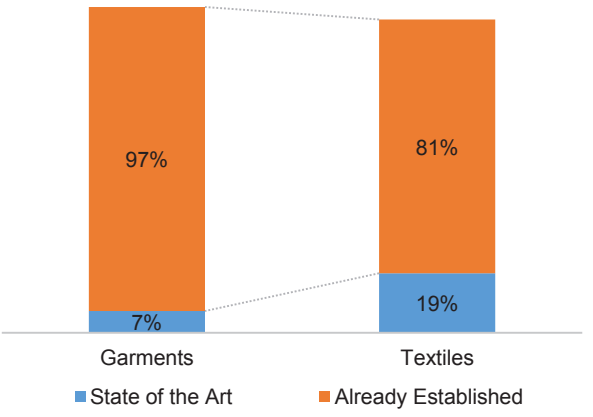


Figure 5: A majority of both textile and readymade garments manufacturing firms said that th

Percentage of textile and readymade garments manufacturing firms that purchased state of the art or already established technologies?



1.6. Created vs Bought Technology

When were asked if they preferred making or buying new innovations, a majority of firms (81%) reported that preferred buying innovation. Whereas, amongst the 19% firms who preferred making new innovations were almost large sized firms (80%).

Figure 6: A majority of surveyed firms preferred buying technology

Do you prefer making or buying technologies?

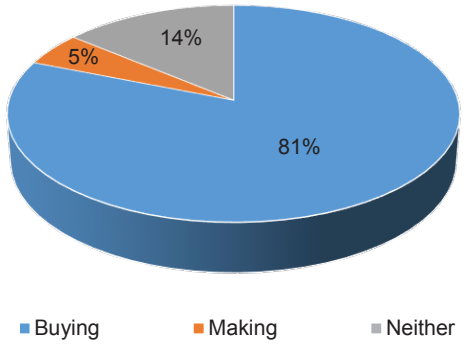
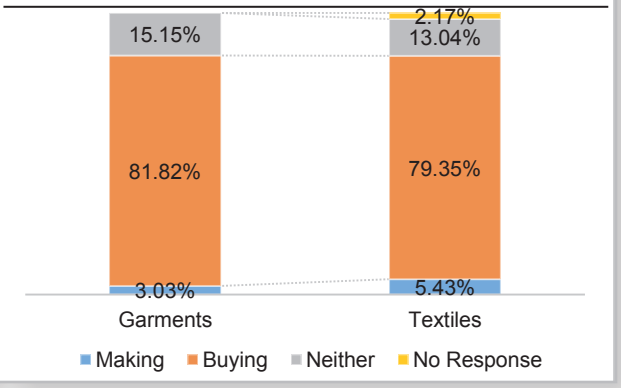


Figure 6: A majority of both textile and readymade garment manufacturing firms said that they preferred buying technology

Percentage of textile and readymade garments manufacturing firms that preferred making or buying technologies?



Looking sector-wise, a greater percentage of both readymade garment sector firms (81%) and textile sector firms (79%) preferred buying already established innovation.

1.7. Future Plans for Introducing Technology

The survey also analyzed the future innovation plans of firms. A majority of innovating firms (50%) claimed that they were planning to introduce a new technology again in the next 12 months.

Looking sector-wise, a majority of textile firms (57.61%) said that they were planning to introduce a new technology in the next 12 months. Whereas, a majority of readymade garment sector firms (60.61%) were not planning to innovate in the next 12 months.

Figure 7: Almost of half of the surveyed firms said that they were planning to innovate again during next year

Are you planning to introduce new technology in your firm in the next 12 months?

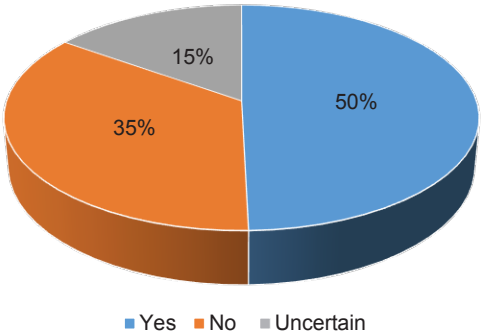
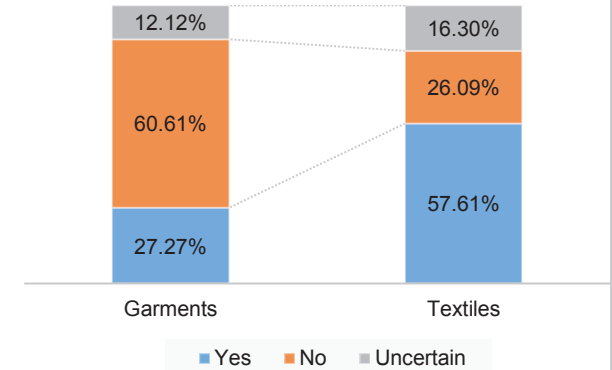


Figure 7: A majority of textile manufacturing firms were to innovate next year

Percentage of textile and readymade garments manufacturing firms that were planning to introduce new technologies in the next 12 months?



2 BARRIERS TO TECHNOLOGY ADOPTIONS

The firms were asked to rate the barrier faced in the attempt to adopt new technologies, equipment and or software upgradation. These firms were particularly asked how lack of financing, lack of innovation opportunities, retraining employees and resistance to change affect their technology adoption.

The overall analysis of all these barriers revealed that lack of financing was the greatest barrier faced by firms followed by barriers faced while retraining employees to adopt to new technology. Whereas, resistance to change among employees was found to be the least barrier faced by the innovating firms.

Figure 8a: Lack of Financing followed by Retraining Employees were the greatest barriers while Resistance to change was the least Export

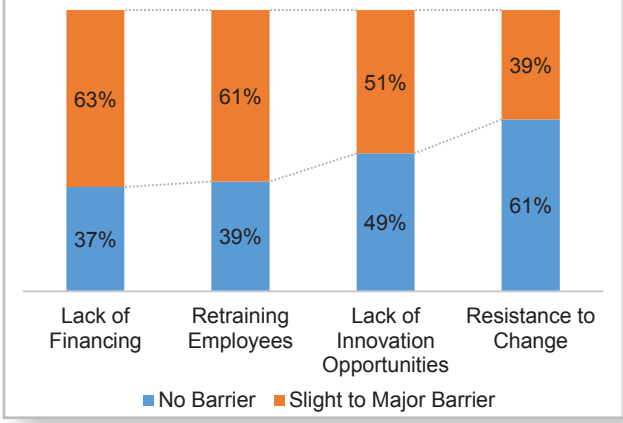
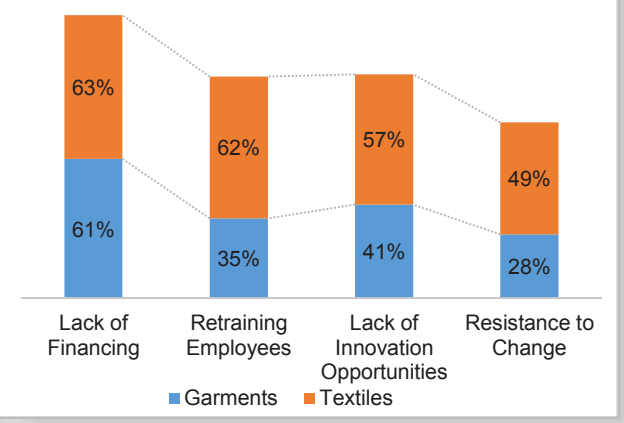


Figure 8b: Both Textiles and Readymade Garments manufacturing firms said that Lack Export



2.1. Financial Barriers

Firms facing obstacles to technology adoption tend to be less important. In our sample, when asked about the barriers faced while trying to perform technological innovations, one of the greatest barriers faced by the firms was lack of financing.

Figure 9a: Almost 63% of surveyed firms said that they faced some level of Export

How would you rate the Financial Barriers faced while trying to perform technological innovations?(1 being No Barriers and 5 Being Major Barriers)

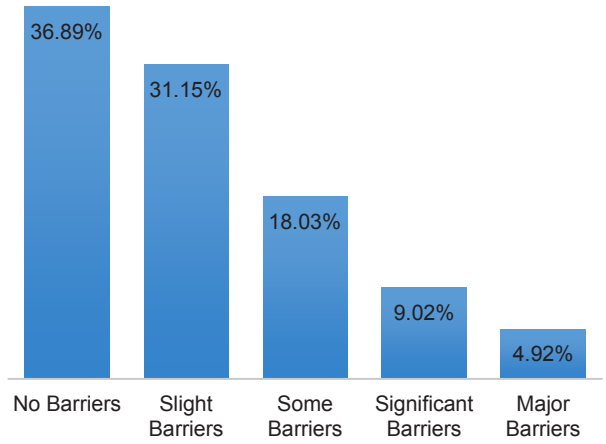
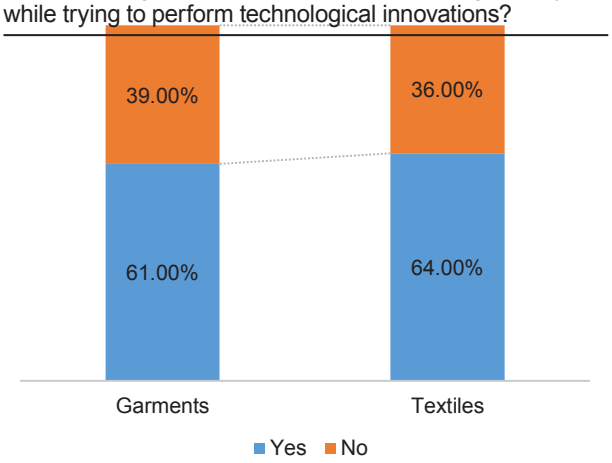


Figure 9b: Relatively greater percentage of textile firms faced barriers in retraining Export

Percentage of textile and readymade garments manufacturing firms faced barriers in retraining employees while trying to perform technological innovations?



2.2. Retraining of Employees

A large number of firms (79%) said that they did not have to retrain their employees in order to adopt the new technologies/software and a significant percentage of them (89%) claimed to have faced no resistance from their employees when trying to introduce innovation.

Looking sector-wise, a large number of readymade garments sector firms (92%) and textile sector firms (75%) did not have to retrain their employees to adopt the new technology.

Figure 10a: Almost 56% of surveyed firms said that they faced some level of barriers while retraining employees for

How would you rate barrier faced in retraining employees while trying to perform technological innovation?

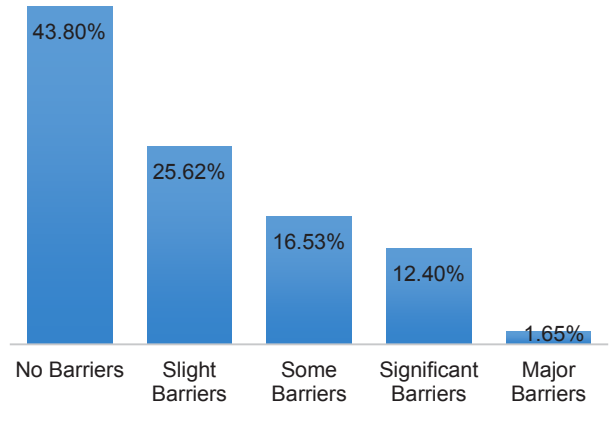
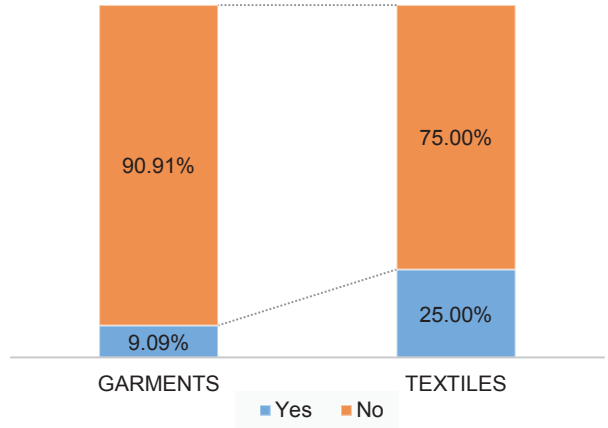


Figure 10b: Textile manufacturing firms faced more Financial Barriers as compared to readymade

Percentage of textile and readymade garments manufacturing firms that faced financial barriers while trying to perform technological innovation?



2.3. Lack of Innovation Opportunities

The second greatest barrier faced by the firms while trying to perform technological innovations was lack of innovation opportunities.

Figure 10c: Almost 49% of firms faced some level of barriers due to lack of innovation opportunities while trying to perform technological innovations

Was lack of Innovation Opportunities a barrier to innovation?

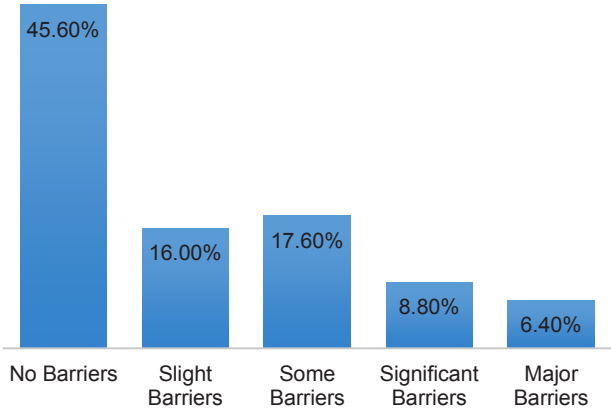
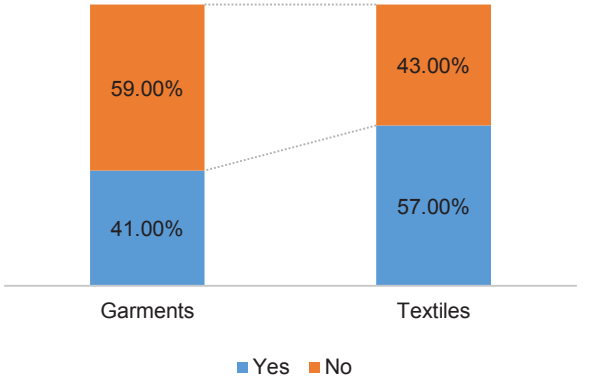


Figure 10d: A greater percentage of textile firms said that they faced barriers due to lack of innovation opportunities

Did the innovating garments and textiles manufacturing firms face Lack of Innovation Opportunities



2.4. Resistance to Change in Workplace

A significant percentage of them (89%) claimed to have faced no resistance from their employees when trying to introduce innovation.

Figure 10e: Almost 43% firms said that they faced some level of barriers due to resistance to change while trying to perform technological innovations

Was Resistance to Change a barrier to innovation?

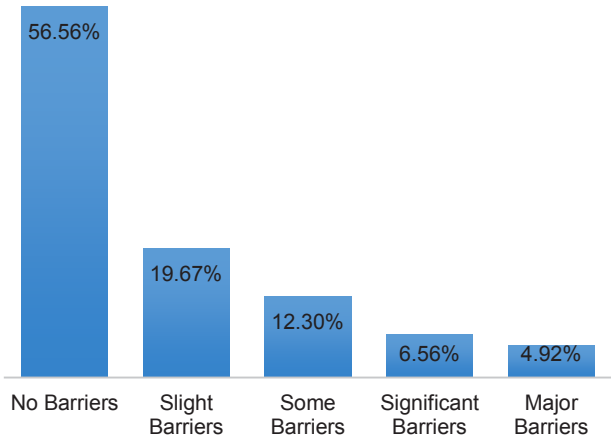
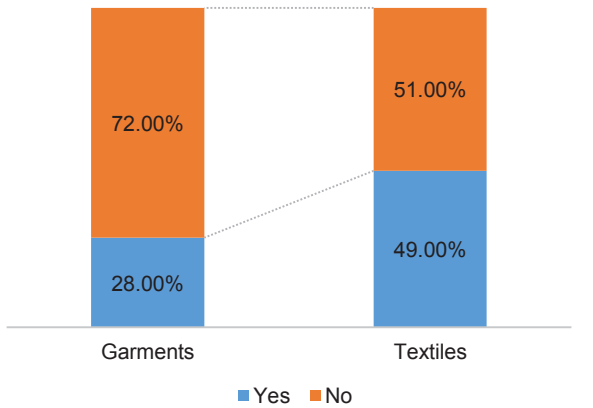


Figure 10f: Around 50% of survyed textile manufacturing firms said that they faced barriers

Did the innovating garments and textiles manufacturing firms faced Resistance to Change as a barrier while trying to perform technological innovations?



3 COMPETITIVE INNOVATIONS

In this section of the survey, the firms were analysed on competitive innovations as compared to their peers. In this part, the innovating firms were asked about their major areas of innovations, who was responsible for these technological development, their sources of funding to finance their innovation activities and drivers of initiating innovations.

3.1. Frequency of Different Innovations

Looking sector-wise, firms in the textiles sector reported that they innovated in the areas of product (82%), process (76%), technology (73%), marketing (80%) and business model (34%). Whereas, the readymade garments sector firms reported that innovated in the areas of product (78.7%), process (72.7%), technology (36%), marketing (67%) and business model (27.27%).

Figure 11a: 83% of overall firms said that they innovated in the area of Product at least sometimes of the time

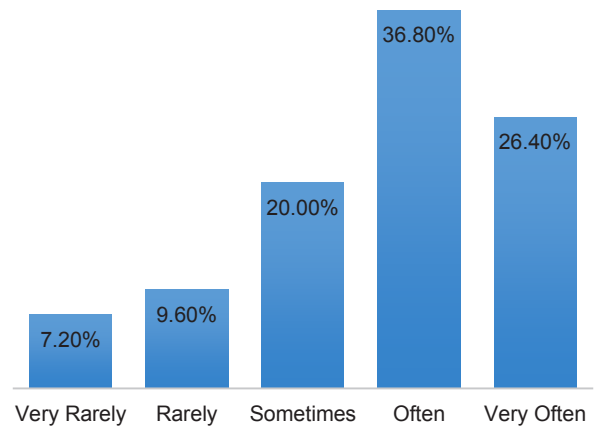
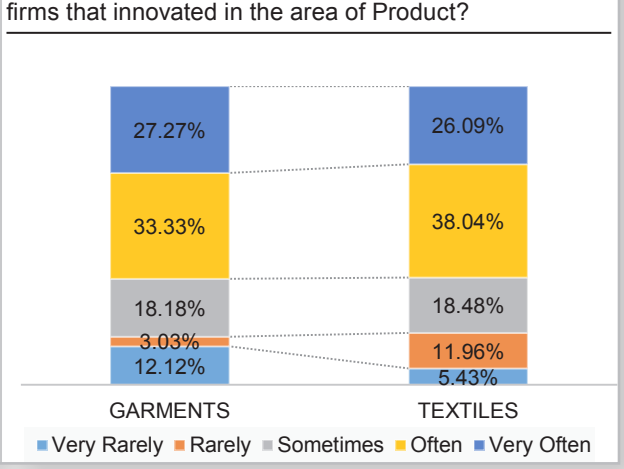


Figure 11a: A greater percentage of textile manufacturing firms said that they innovated in the area of product as compared to readymade garments manufact



When asked about how often they innovated in the area product, a highest percentage of 83% firms reported that they innovated (sometimes, often and very often) in this type of innovation.

Figure 11b: 75% of firms said that they innovated in the area of Process at least some of the time

11b- How often your firm innovated in the area of Process over the last 3 year?

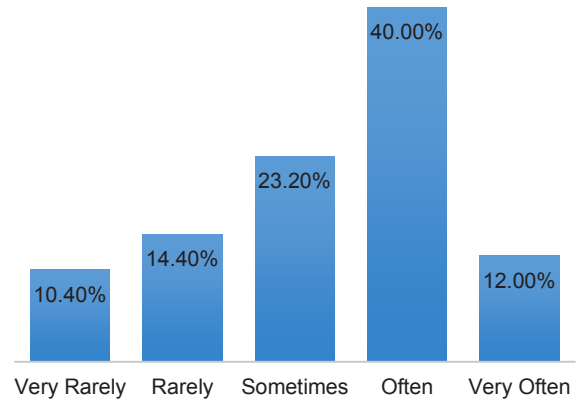
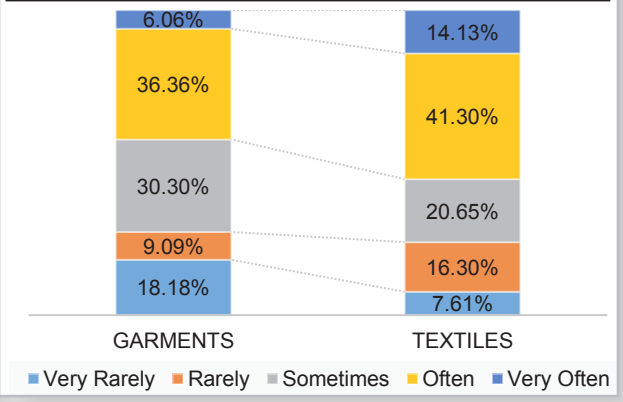


Figure 11b: Comparatively a greater percentage of Textile manufacturing firms innovated in the area of process as compared to readymade garment manufacturers

11b- Percentage of textiles and garments manufacturing firms that innovated in the area of Process?



When asked about how often they innovated in the area of process, a greater percentage of 75% firms reported that they innovated (sometimes, often and very often) in this type of innovation.

Figure 11c: 63% of firms reported that they innovated in the area of technology at least some of the time

How often your firm innovated in the area of Technology over the last 3 years?

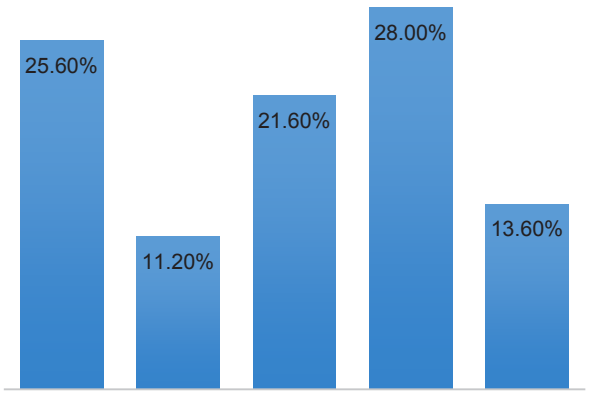
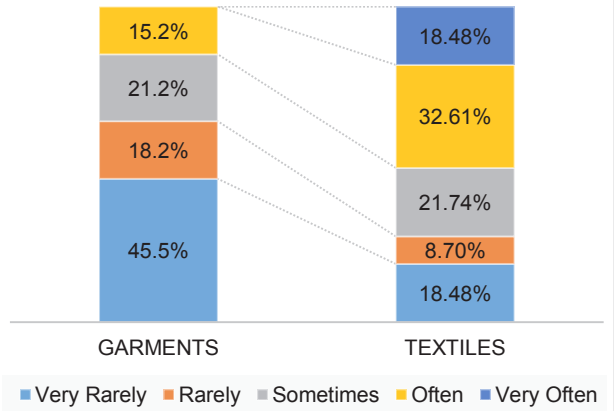


Figure 11c: A greater percentage of textile firms innovated in the area of technology as compared to readymade garments manufacturing firms

Percentage of textiles and garments manufacturing firms that innovated in the area of Technology?



When asked about how often they innovated in the area of technology, 63% of firms reported that they innovated (sometimes, often and very often) in this type of innovation. Whereas looking sector-wise, a majority of textiles manufacturing firms (73%) reported that they rarely innovated in this type of innovation as compared to readymade garments manufacturing firms (36%).

Figure 11d: 77% of respondent firms reported that they innovated in the area of Marketing

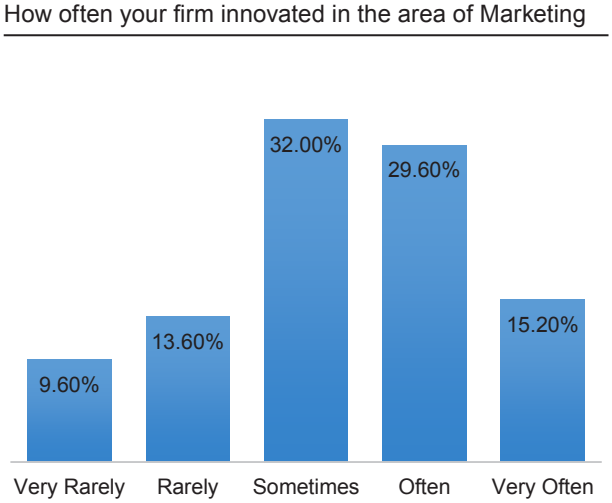
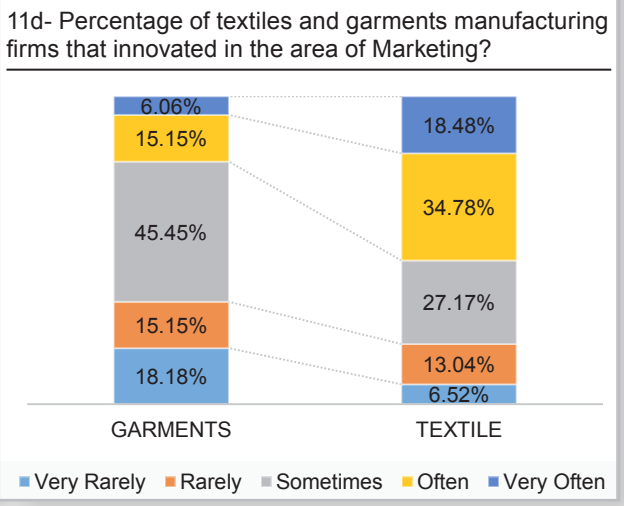


Figure 11d: A greater percentage of textiles manufacturing firms innovated in the area of marketing as compared to readymade garments manufacturer



When asked about how often they innovated in the area of marketing, a greater percentage of 77% firms reported that they innovated (sometimes, often and very often) in this type of innovation. Looking sector-wise, a greater percentage of 80% textile manufacturing firms said that they innovated in the area of marketing as compared to 67% of garments manufacturing firms which reported that they innovated in this area.

Figure 11e: A slightly greater percentage of textile manufacturing firms innovated in the area of business model as compared to readymade garments manufacturer

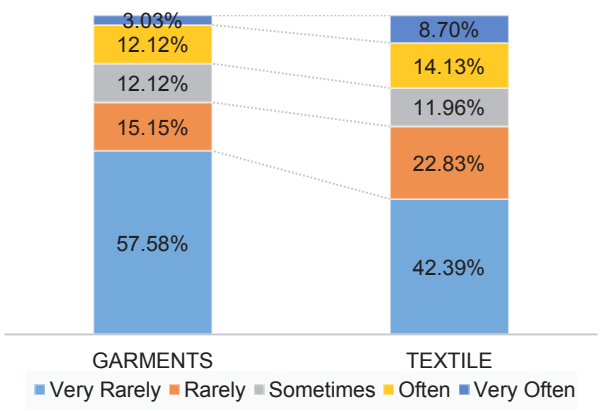
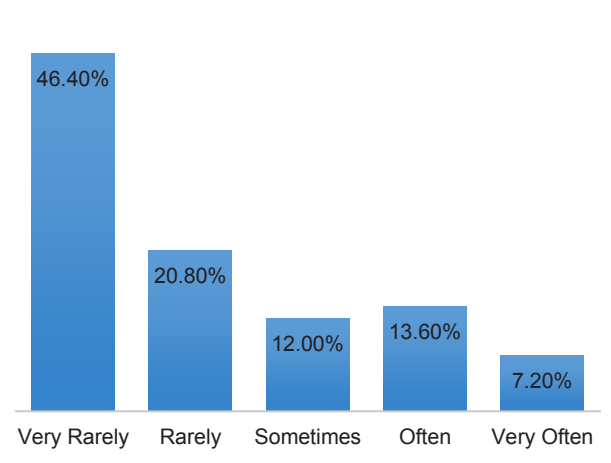


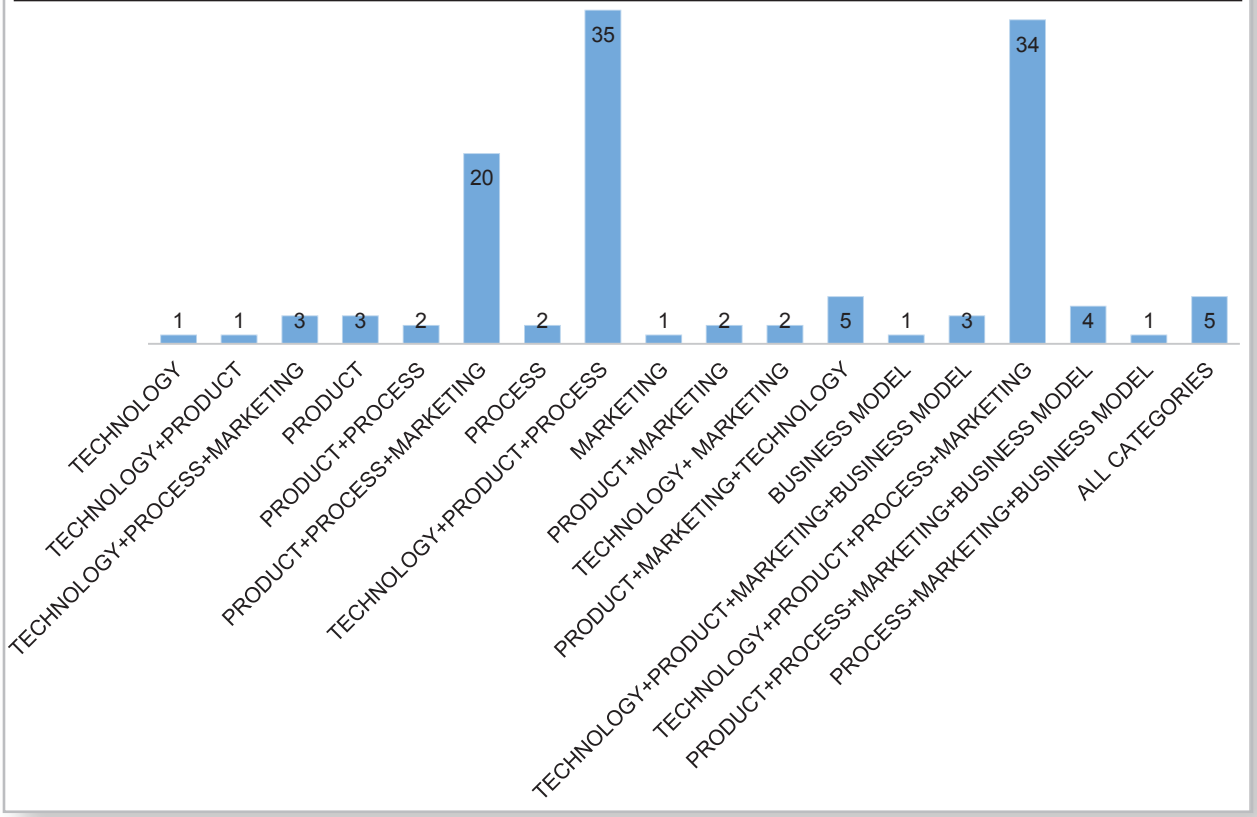
Figure 11e: Only 33% of respondent firms said that they innovated in the area of business model



When asked about how often they innovated in the area of business model, the lowest percentage of 33% firms reported that they innovated (sometimes, often and very often) in this type of innovation.

Figure 11f: The majority of firms responded that they innovated in the combinations of technology, product and process

Of the firms that innovated, how often they innovate in the following areas?



When asked about how often the innovating firms innovated in the areas of product, process, technology, marketing and business model, a majority of firms innovated in the combination of 3 or 4 areas. Looking at the combinations of areas in which the majority of firms innovated, the greatest number of firms (35 firms) innovated in the combinations of product, process and technology. The second highest number of firms (34 firms) innovated in the combination of product, process, marketing and technology. Whereas the third highest number of firms (20) innovated in the combination of product, process and marketing.

3.2. Collaborations for New Technology

In response to the question about who was responsible for introducing new technologies, a majority of firms reported that they initiated themselves.

Figure 12a: More than half of firms responded that they themselves were responsible for introducing these developments

What was the source of innovation? (Overall Firms)

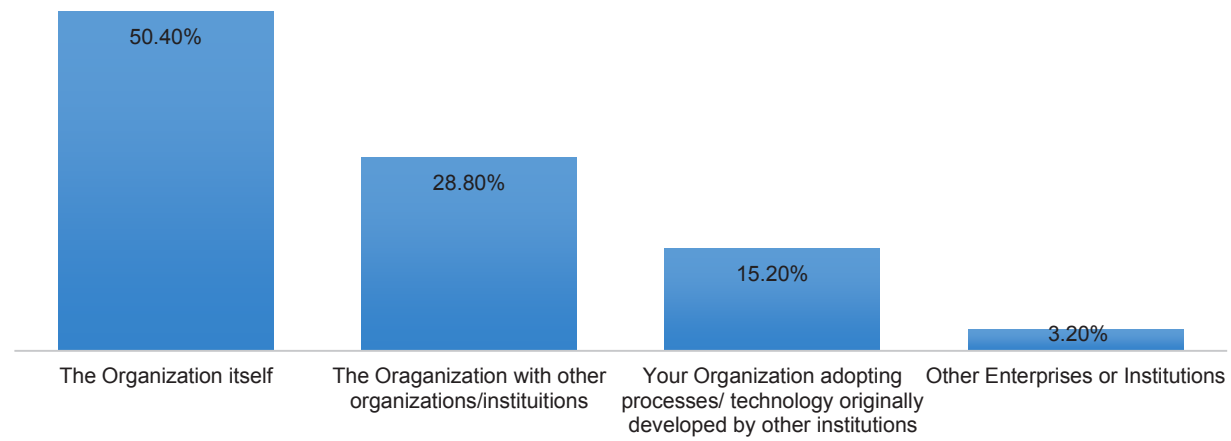
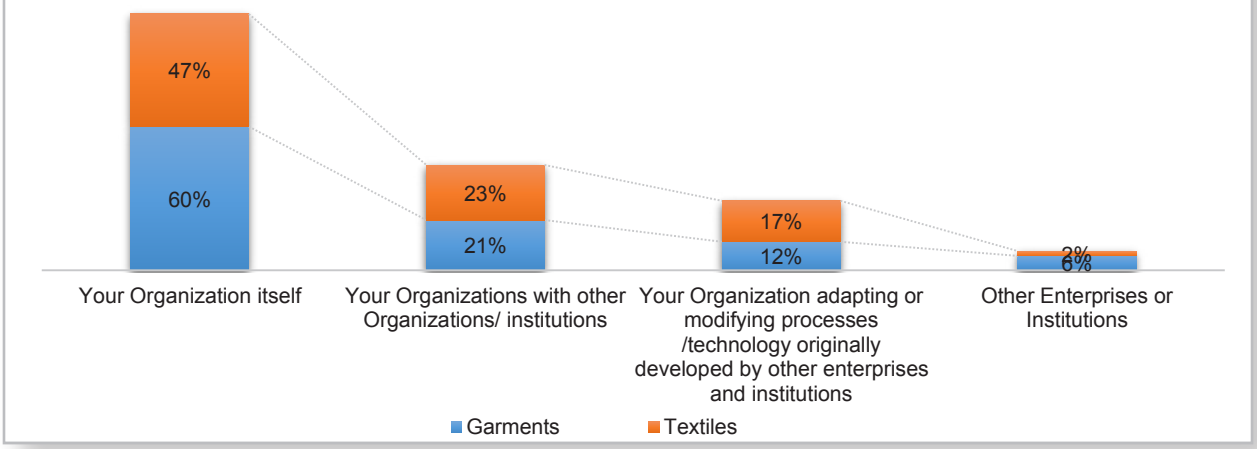


Figure 12b: A greater percentage of readymade garments manufacturing firms said that their organizations themselves were responsible for introducing innovation

Sources of Innovation for garments and textiles manufacturing firms?



Looking Sector wise, a majority of readymade garments manufacturing firms (60%) reported that their organizations themselves were responsible for introducing these technological developments as compared to textiles manufacturing firms (47%).

3.3. Sources of Innovation Funding

Funding of innovation can be a major issue for firms. In our sample, when asked about the sources of funding for innovations, a large proportion of firms (42%) reported that those innovations were financed by their internal resources only (equity funds). Whereas, 53% said that their innovations were financed by using their internal sources as well as taking loans from the banks, while 4% said that their innovations were financed using internal resources and aid from the government.

Looking at sources of funding for innovation across sectors, most of the garments manufacturing firms were self-financed whereas, almost half of the textile manufacturing firms financed their innovation activities with the assistance of financial institutions.

Figure 13: More than half firms said that they relied on the combinations of their internal sources and banks

13- What sources of funding do you rely upon for your innovation expenditure

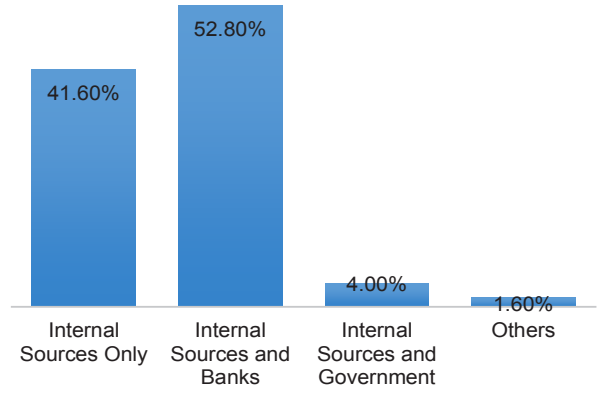
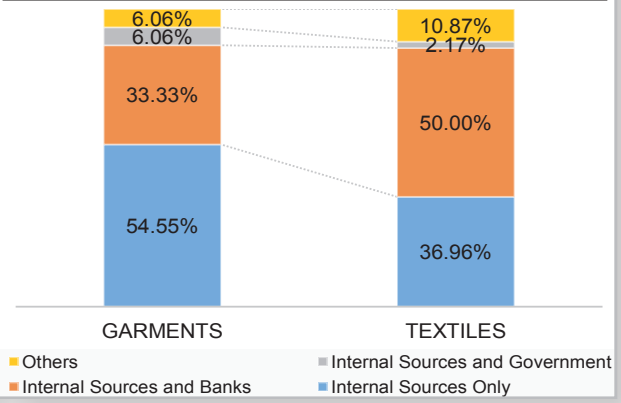


Figure 13: A majority of readymade garments reported that they relied upon internal sources only. Wheras, a majority of textiles firms relied upon internal sources

13- Sources of Funding for innovating textile and garments manufacturing firms



3.4. Reasons for Innovating

The incentives to innovate are important for firms. In our survey, when asked about the most significant driving innovation in their industry, a majority of firms (46%) reported pressure to increase quality was one of the most significant drivers of initiating innovation followed by the desire for market leadership (29%).

Looking sector-wise, a large number of readymade garment sector (60%) and a large number of textile sector (40%) firms reported that increasing quality of their products was the most significant driving factor for their specific industries.

Figure 14: The main reason for innovating for readymade garments manufacturing firms was to increase the quality of their product.

Main Reasons for Innovating (textile and garments manufacturing firms)?

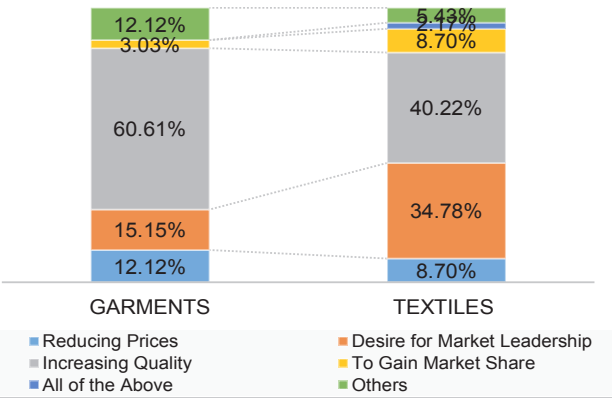
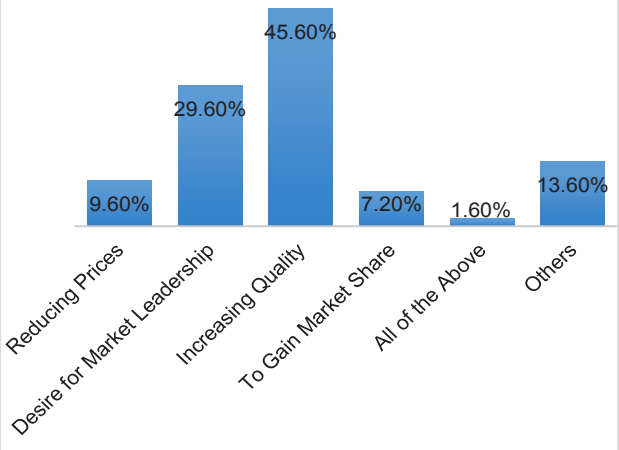


Figure 14: Most of the firms reported that the main reason for innovation was to improve the quality of their product

Main Reasons for Innovating?



So, we can conclude that the main reason for innovation in our sample is improving quality of product. Likewise, looing sector-wise the main reason to innovate for both readymade garments manufacturing firms (60.61%) and textiles firms (40.22%) was to improve the quality of their products.

4 RESULTS OF INNOVATION

In this section of the survey, the innovating firms were asked about the impact of their innovation related activities on their revenues, cost of production, quality of product and prices.

4.1. Impact on Revenues

It is also important to understand the impact of firm level innovation. In our survey, in response to the question asked about the impact of firm level innovations on firm's performance, 65% of the respondent firms reported that innovation led to increase in revenues.

Figure 15a: A greater percentage of textiles manufacturing firms said that their revenues increased as a result of innovation

Did the Revenue of innovating textile and garments manufacturing firms increase?

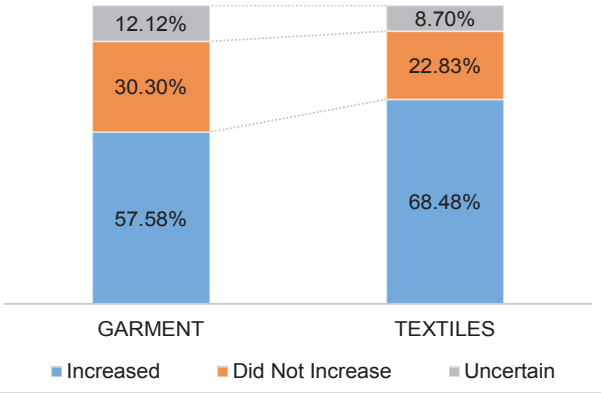
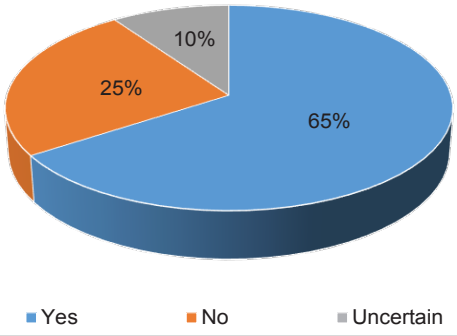


Figure 15a: A majority of firms said that their revenues increased as the result of innovation

Did the Revenues of innovating firms increase?



4.2. Impact on Cost of Production

Figure 15b: More than half firms said that their cost of production decreased as a result of innovation

Did the Cost of Production of innovating firms decrease?

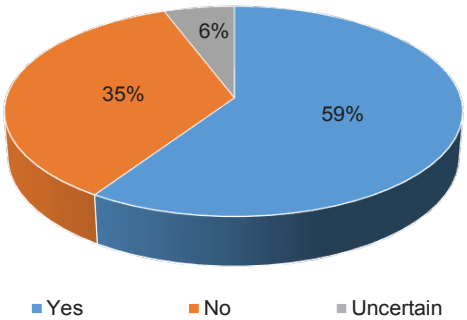
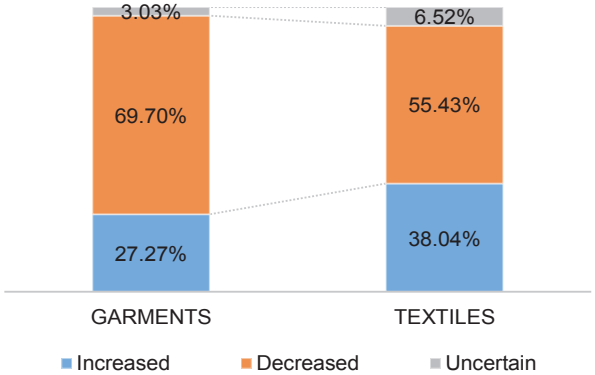


Figure 15b: A greater percentage of readymade garments manufacturing firms said that their cost of production decreased as a result of innova

Did the Cost of Production of the innovating textile and garments manufacturing firms decrease?



4.3. Impact on the Quality of Output

Figure 15c: The greatest percentage of all respondent firms said that their quality of product improved as a result of innovation

Did the Quality of Output of the innovating firms improved?

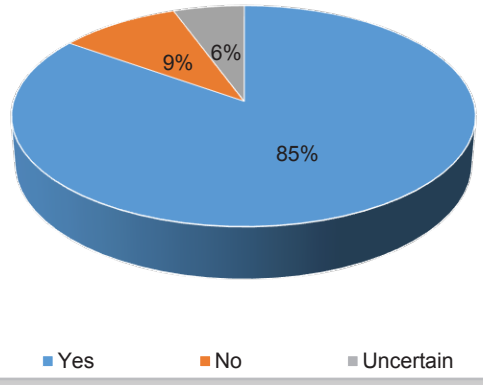
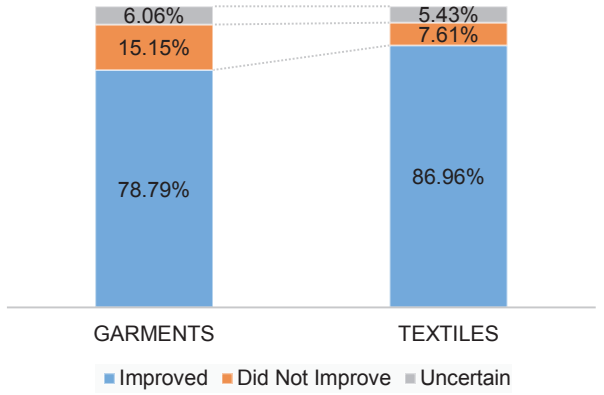


Figure 15c: The improvement in the quality of product as a result of innovation was higher in textiles firms as compared to readymade garments

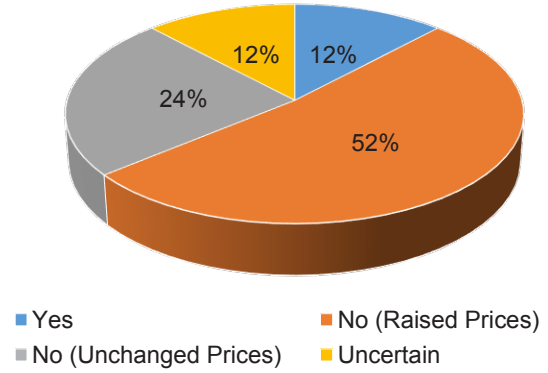
Did the Quality of Output of the innovating textile and garments manufacturing firms improved?



4.4. Impact on Prices

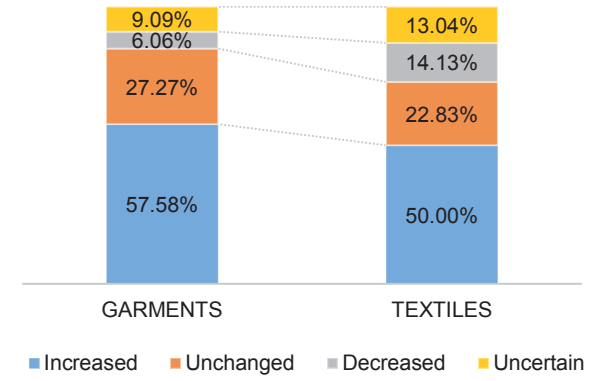
More than half of firms said that their prices remained unchanged/ were not increased as a result of innovation

15d- Did the innovating firms decrease their Prices?



In both textiles and readymade garments manufacturing firms, more than half of the firms agreed that their prices remained unchanged after their innovation

15d- Did the innovating textile and garments manufacturing firms decrease their Prices?



5 IMPACT OF DIFFERENT TYPES OF INNOVATIONS ON FIRM PROFITS

In this section of the survey, the innovating firms were asked how different types of innovations in product, process, technology, marketing and business model had the greatest impact on their profitability.

When asked about the impact of various types of innovations on firm profits, a majority of them reported that innovation in products (55%) and innovation on technology/equipment (29%) resulted in higher profits.

Looking at the types of innovations impacting profits across sectors, the most important factor for garments manufacturing firms was product, whereas, for the textile manufacturing firms, product and technology contributed most to their firm's profits.

Figure 16: Innovation in product resulted in profits for a greater percentage of readymade garments firms as compared to textiles firms

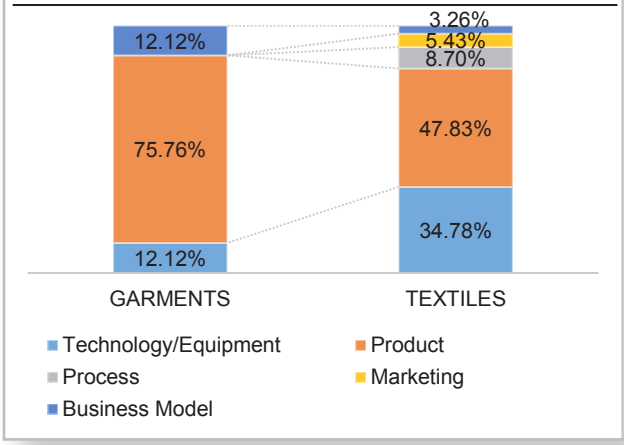
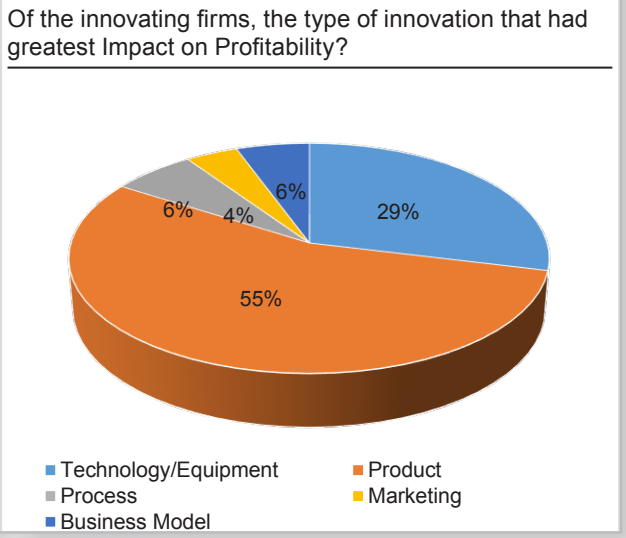


Figure 16: Innovation in product lead to the greatest increase in profitability in more than half of responding firms



6 ANALYSIS OF EXPORTING FIRMS

In the last section of the report, a detailed analysis was done on innovation and technological upgradation with respect to exporting firms.

Data analysis of exporting firms revealed that a majority of exporting firms were large sized, textile firms and were exporting a majority of their output abroad. Another interesting result is that most of the exporting firms said that they purchased new machinery/equipment from abroad during the last 1-5 years and the majority of this technology was already established. Major barriers faced by these innovating exporting firms were financial barriers followed by retraining employees. A majority of these firms said that the major source of funding for their innovations related activities was utilizing their own internal resources (Equity). Also, a majority of these firms were found to be engaging in product and marketing innovations and these innovation related activities had the greatest impact on their revenues.

Figure 19: A majority of firms were found to be exporting their products

Is your firm an exporter of a Product

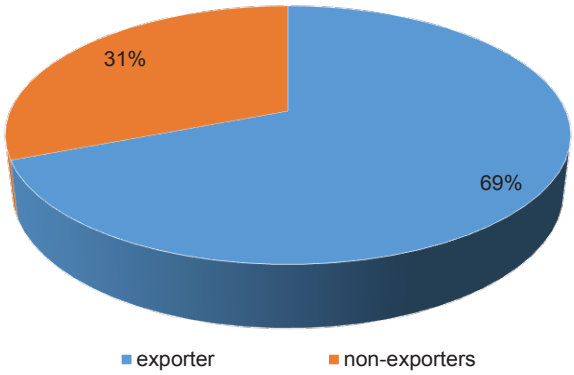


Figure 20: The majority of exporting firms in the survey were large-sized firms

Size of Exporting Firms

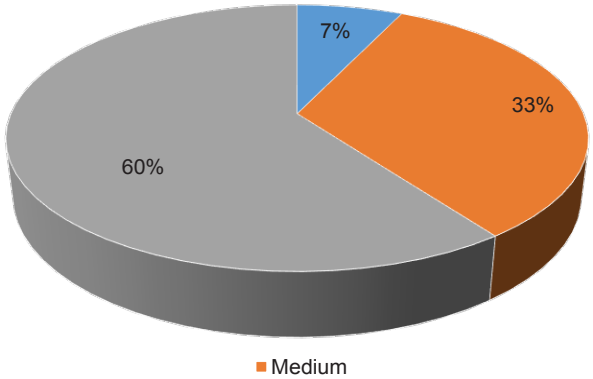


Figure 21: A majority of the surveyed firms that exported were producing textiles

What Industry do you operate in?

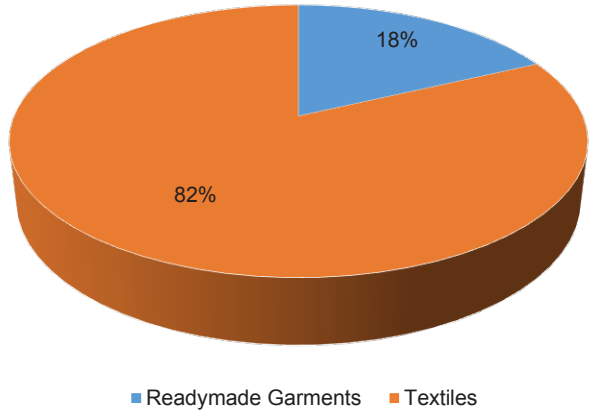


Figure 22: More than 40% of exporting firms said that they were exporting 81%-100% of their output abroad

What is the percentage of your output exported?

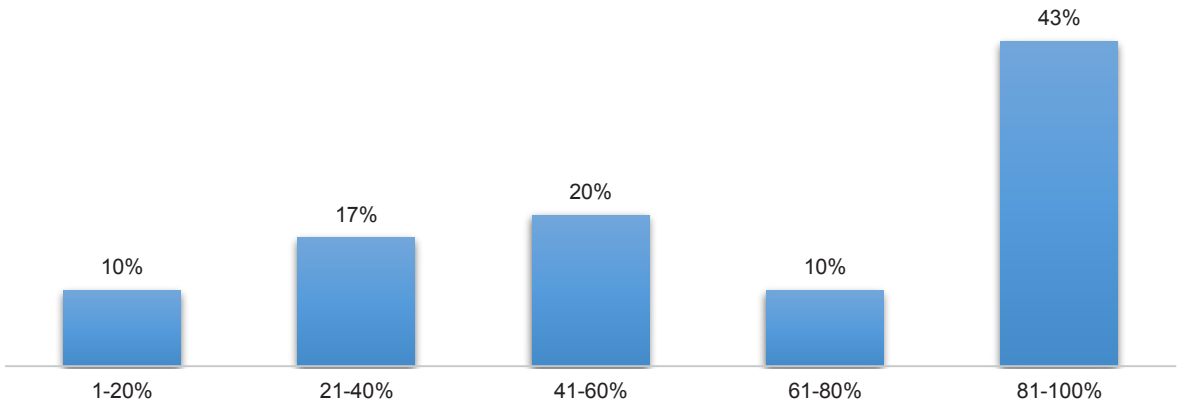


Figure 23: More than 90% of exporting firms said that they innovated i.e. purchased new machinery or software in the last decade

Have you purchased any new equipment and/or software in the past 10 Years

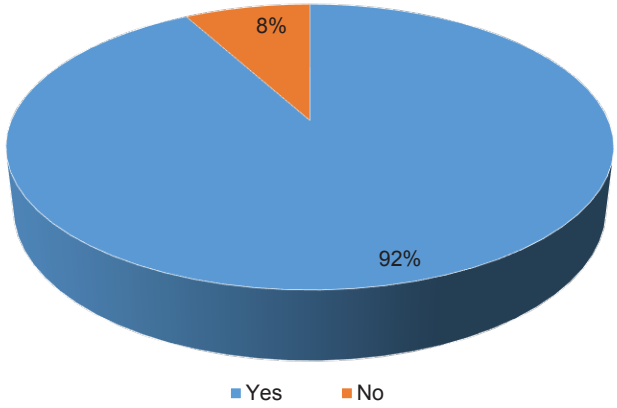


Figure 24: Almost 90% of exporting firms that had purchased new machinery/software did so from abroad

Where did you purchase this Technology/Equipment from? (Last 4 Innovations)

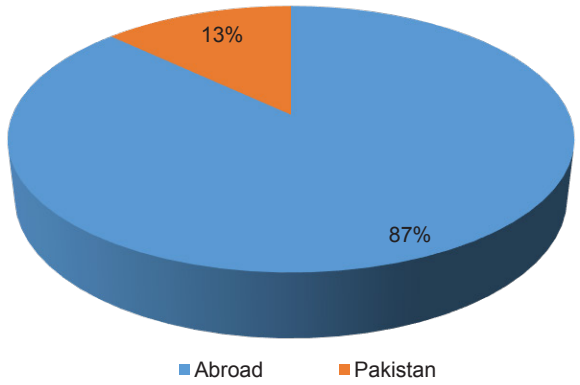


Figure 25: A majority of exporting firms that purchased machinery/software said that they had made the purchase during the last 1-5 years

How many years ago did you purchase this Technology/Equipment (Last 4 Innovations)

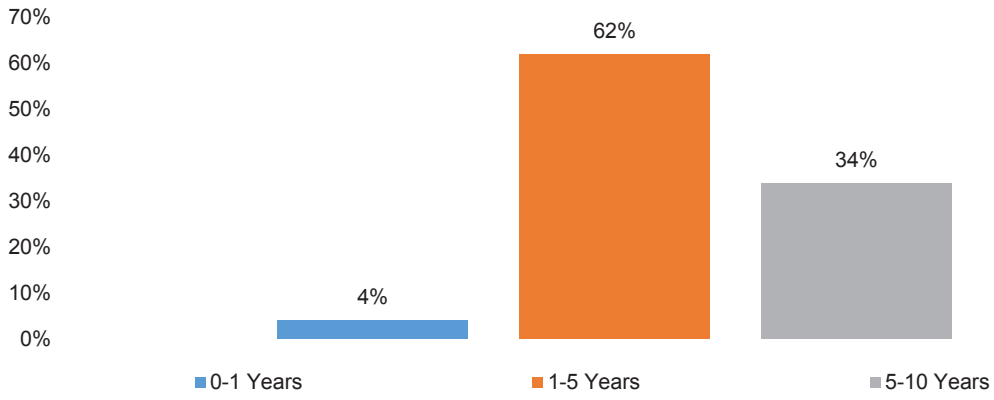


Figure 26: Almost 90% of exporting firm that bought new machinery/software bought already established machines

Were these machines you purchased were state of the art or already established?

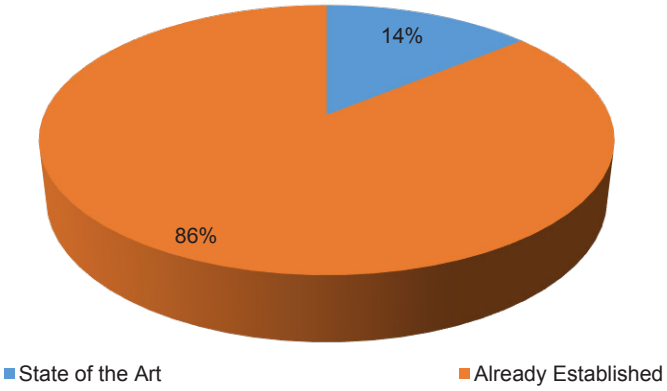


Figure 27: More than half of exporting firms were planning to innovate in the next 12 months

Are you planning to introduce any new technology in your firm in the next 12 months?

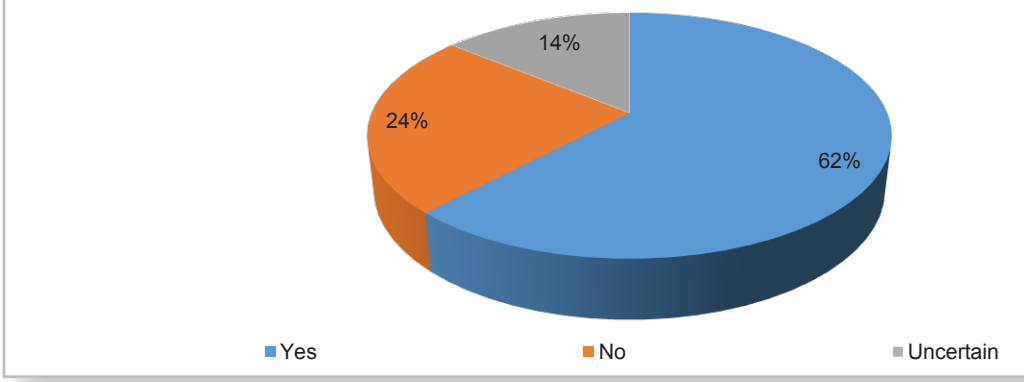


Figure 28: One of the major barrier faced by the exporting firms while trying to perform technological innovations was Financial Barrier

How would you rate the barriers you faced while trying to perform Technological Innovations

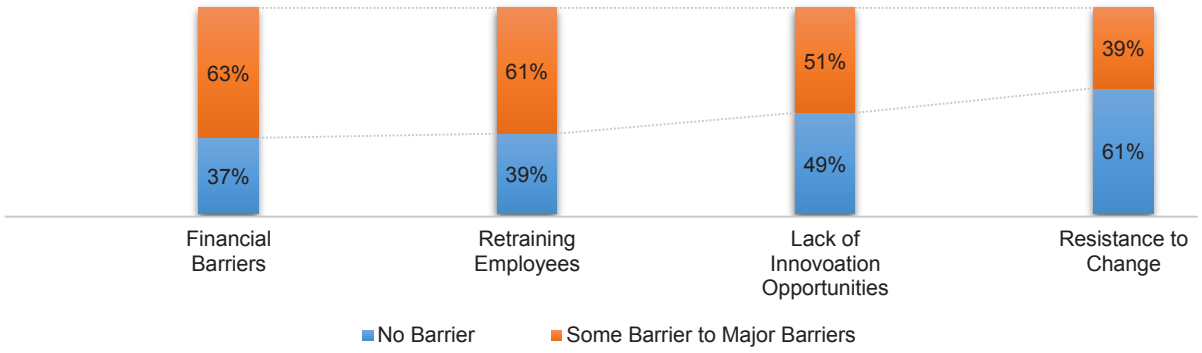


Figure 29: Product innovations were the most often identified innovation by exporting firms followed by marketing innovations

How often did exporters innovate in these areas last 3 years?

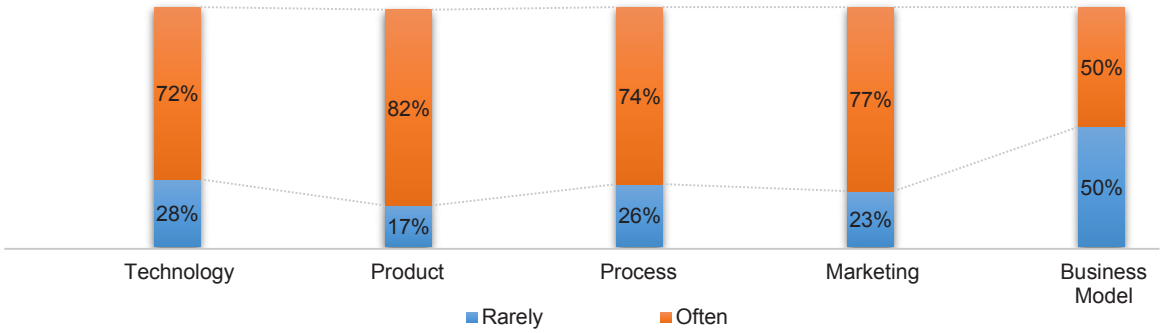


Figure 30: For a majority of innovations, the organization itself was responsible for introducing these changes

In the majority of these innovations, who was responsible for introducing these developments?

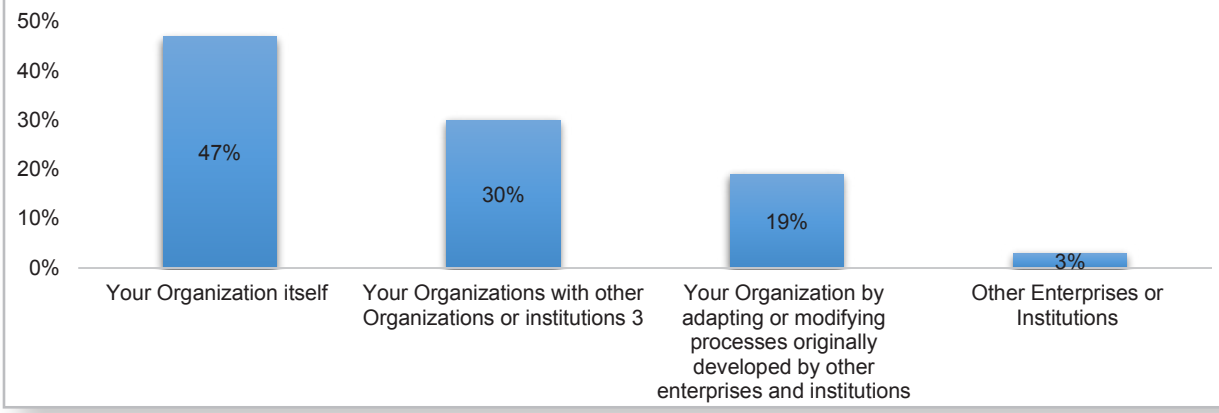


Figure 31: A majority of firms relied upon their internal resources (Equity Funds) for their innovation-related expenditures

Which source of funding do you rely upon for your innovation expenditure?

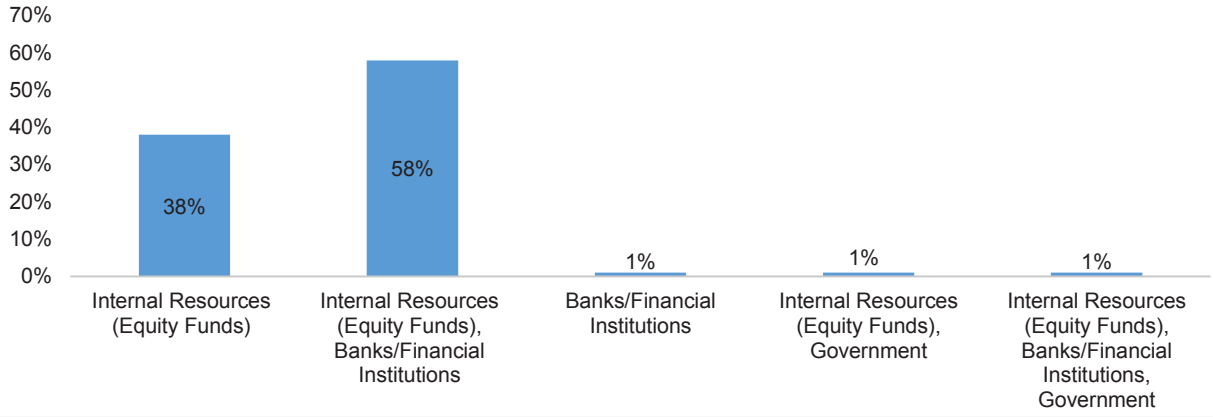


Figure: Innovation had greatest impact on improving the quality of products for exporting firms

14-What are the results of innovation on the following?

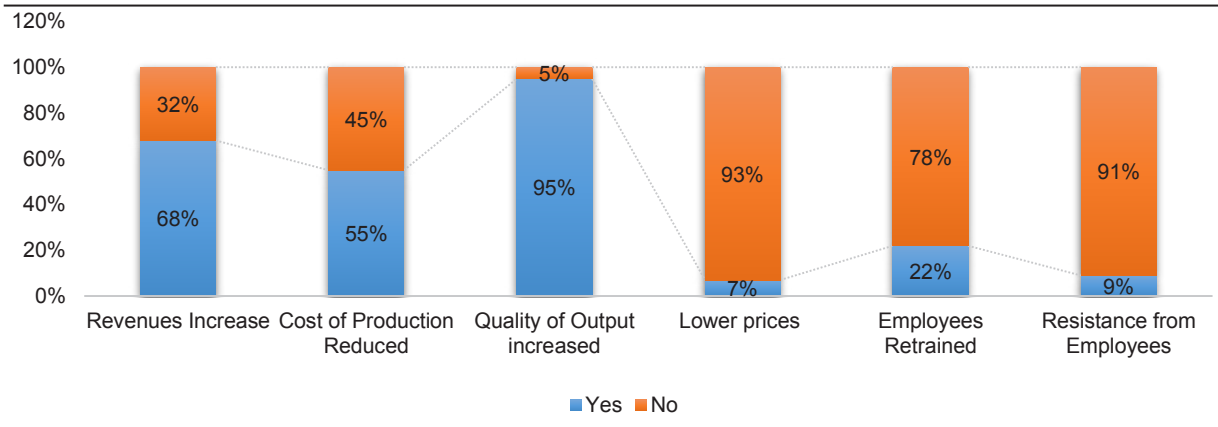


Figure 32: Pressure to increase quality was found to be the most significant reason for initiating innovation

Which factor is most significant for your industry as a driver of initiating innovation?

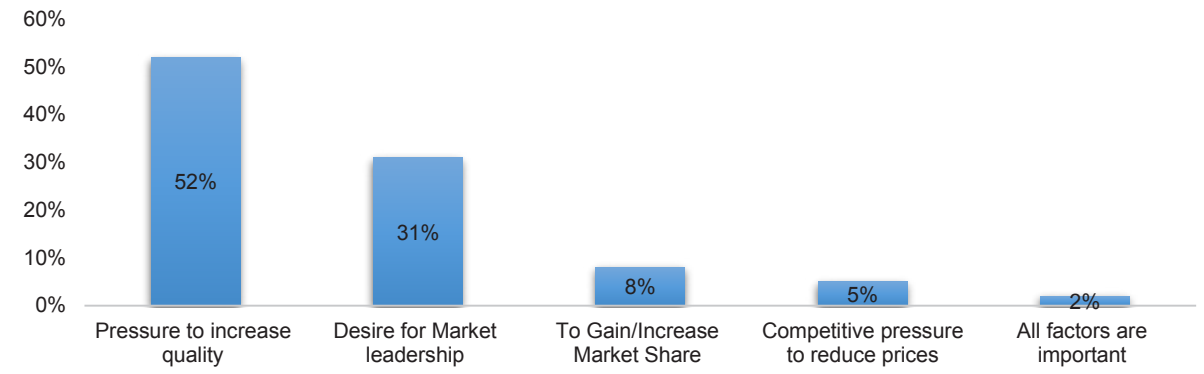
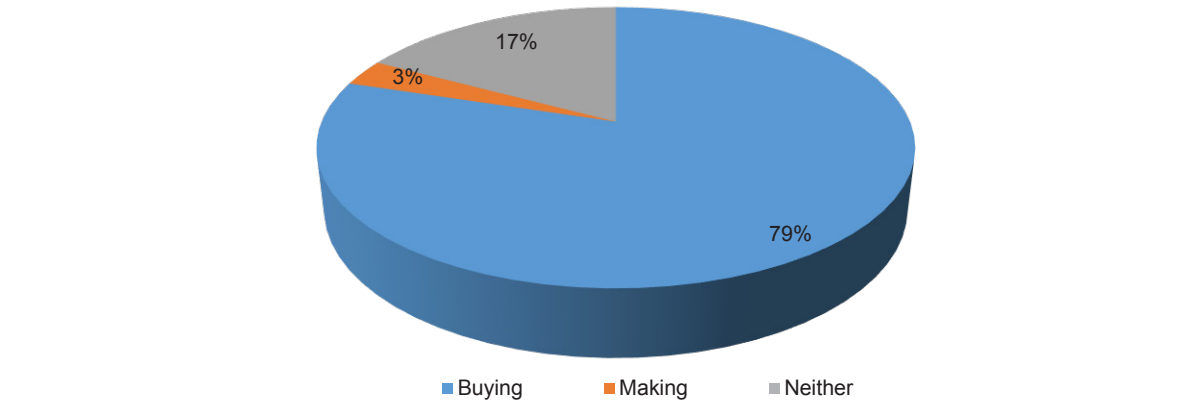


Figure 33: A majority of exporting firms preferred buying innovations instead of developing their own

Do you prefer making or buying innovation?



7 CONCLUSIONS

Productivity growth is critical for long term economic growth. A critical component of productivity growth is innovation and lack of innovation is usually a major problem in developing countries. The Innovation and Technology Centre (ITC) of the Lahore School of Economics conducted a survey in 2018/2019 to observe the growing trends in innovation and technology upgradation in the textile sector of Lahore. The purpose of this survey was to observe the extent, quality and impact of innovation activities on the performance and profitability of the innovating firms. The survey also looked at the barriers faced by the innovating firms in this sector. The data was collected from 125 firms involved in manufacturing readymade garments and other textiles during the period September to December 2018. The firms were also characterized in terms of exporters and non-exporters in order to see the innovative behavior of each.

When asked about the impact of various types of innovations on firm profits, a majority of firms reported that innovation in products resulted in higher profits while less than half of firms said that innovating in technology/equipment resulted in higher profits. Looking at the types of innovations increasing profits across sectors, the most important factor for garments manufacturing firms were product innovations, whereas, for the textile manufacturing firms, product and technology innovations contributed most to their firm's profits.

The incentives to innovate are particularly important for firms. In our survey, when asked about the most significant factor driving innovation in their industry, a majority of firms reported pressure to increase the quality was one of the most significant drivers of innovation followed by the desire for market leadership. Looking sector-wise, a large number of readymade garment sector and a large number of textile sector firms reported that increasing the quality of their products was the most significant driving factor for their specific industries. So, we can conclude that the main reason for innovation in our sample was to improve the quality of product.

Analyzing the data of exporting firms revealed that a majority of exporting firms were large sized, textile firms and were exporting a majority of their output abroad. Another interesting result is that most of the exporting firms said that they purchased new machinery/equipment from abroad during the last 1-5 years and the majority of this technology was already established. Major barriers faced by these innovating exporting firms were financial barriers followed by retraining employees. A majority of these firms said that the major source of funding for their innovations related activities was utilizing their own internal resources (Equity). Also, a majority of these firms were found to be engaging in product and marketing innovations and these innovation related activities had the greatest impact on their revenues.

Overall, a majority of firms in our survey prefer buying innovations. A majority of responding firms also reported that they purchased already established machinery/equipment from abroad in the last 1-5 years and most of these innovations were financed by using their internal resources. Also, a majority of innovating firms reported that they innovated in the areas of product and the main driving factor behind their innovation was to improve the quality of their product which eventually led to higher profits. The two greatest barriers faced while trying to perform innovation were financing and lack of innovation opportunities. It can be concluded that more incentives for innovations could be given by providing more sources of funding for the innovating firms in the form of aid from the government and with the assistance of financial institutions.