

# Technology Adaptation of Apparel Industry in Sri Lanka: An Observational Survey

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## Abstract

Technology adaptation has emerged as an important determinant of competitiveness in recent global trade. Gaining competitiveness became a driving force for the apparel firms to adopt technology. The purpose of this paper is to examine the status of technology adoption of Sri Lankan apparel manufacturing firms and the organizational factors that affect the level of technology adoption. Three companies in apparel industry were examined. A qualitative research with an observational study and online interviews were conducted to collect the data. The level of a firm's technology adoption was found to be significantly related to factors such as top management interest, Employee acceptance, capital allocation to technology, tendency toward innovation. While employee acceptance was moderately related to technology adaptation, the effects of top management interest, capital allocation, and innovation were significant. The firms which have adopted new technologies have gained their success than which are not. Our analysis provides a guide to future businesses to adopt new technologies to gain the competitive advantage and achieve the success of the firms while concerning discussed variables which impacts on the technology adaptation.

**Keywords:** Technology Adaptation, Technopreneurship

**Paper type:** Model Testing.

## Introduction

Technology demonstrates a collection of techniques, methods or processes used in the accomplishment of objectives. People use technology to accomplish various tasks in their daily lives, in brief we can describe technology as a product, process or organizations. We apply technology in almost everything we do in our lives. On the other hand technology is dynamic, it keeps on improving because

human needs and demand for technology also keep on changing. So entrepreneurs are emerging and they tend to adopt technology in their businesses. Many businesses are using technology to deliver those products and services to their customers on time. In this case the concept of technopreneurship is emerging.

Technopreneurship is entrepreneurship in a technology intensive context. Technopreneur is the person who destroys the existing economic order by introducing new products and services by creating new forms of organizations and by exploiting new raw materials. Technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm ( Bailetti, 2012) . Through this research we are going study how technopreneurship or technology has adopt in apparel industry in Sri Lanka and we believe that the application of new technologies impact on their success.

Textiles and apparel products is one of the biggest industries in Sri Lanka, and it plays a key role in advancing the country's economy. This industry, entirely privately owned has successfully exploited the opportunities in the international market. The country has the highest apparel exports per capita of any exporting nations in the region .The apparel industry has become a high technological industry. In the current scenario, this industry needs to adopt high technology to compete with the market in terms of productivity and competitiveness ( (Mr. NIRBHAN SINGH, 2013).

The study proceeds to the discussion of availability of technologies and techniques in marketing and production functions of apparel industry in Sri Lanka for past 2 years identify trends and opportunities captured through the marketing and production technology by apparel companies and failures in adopting advanced technology in apparel industry.

## Literature Review

This literature review section addresses the following topics: Technology, Entrepreneurship, Technopreneurship, Technology adaptation of apparel industry.

## Technology

Technology is the collection of techniques, methods or processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation. Technology can be the knowledge of techniques, processes, etc. or it can be embedded in machines, computers, devices and factories, which can be operated by individuals without detailed knowledge of the workings of such things. Technology has affected society and its surroundings in a number of ways. In many societies, technology has helped develop more advanced economies (including today's global economy) and has allowed the rise of a leisure class.

## Entrepreneurship

Entrepreneurship is a way of thinking and acting that is opportunity obsessed, holistic approach and leadership balanced for the purpose of wealth creation. Searches for change, responds to it, and exploits it as an opportunity. Innovation is the specific tool of entrepreneurs, the means by which they exploits change as an opportunity for a different business or a different service. Entrepreneurship pursuit of opportunity without regard to the resources currently under one's control. Entrepreneurship is the development of a business from the ground up coming up with an idea and turning it into a profitable business. But while the definition of entrepreneurship may be simple, its execution is much more difficult. It is the journey of opportunity exploration and risk management to create value for profit and/or social good.

## Technopreneurship

Technopreneurship is a simple entrepreneurship in a technology intensive context. It is a process of merging technology prowess and entrepreneurial talent and skills. In the most obvious way, Technopreneurship is what you get when you unite “entrepreneurship” with “technology”. This is not just the effect of technology on businesses but rather the process where progression in the lives of the people happens. It is the process of using the developments brought about by specialized knowledge to come up with innovations in all the aspects of human life with the aid of a creative and skillful mind. Birth of this field provides every entrepreneur a challenge of exploring an untraveled path towards greater success. Furthermore, Wood (2011) Technopreneur is the person who destroys the existing economic order by introducing, new products and services, by creating new forms of organizations and by exploiting new raw materials. Technopreneurs distinguishes themselves through their ability to

accumulate and manage knowledge, as well as their ability to mobilized resources to achieve a specified business or social goal.

- A person who destroys the existing economic order (creative destruction) by introducing new products and services by creating new forms of organizations and by exploiting new raw material (Schumpeter, 1934).
- Someone who perceives an opportunity and creates an organization to pursue it.
- A person who undertakes risks (by creating an enterprise or business) that has the chance of profit (or success). Technopreneurs distinguish themselves through their ability to accumulate and manage knowledge, as well as their ability to mobilize resources to achieve a specified business or social goal (Kuemmerle, 2002).
- The technopreneur is a bold, imaginative deviator from established business methods and practices who constantly seeks the opportunity to commercialize new products, technologies, processes, and arrangements (Baumo, 2002).
- The technopreneur distinguishes logic from tradition, tradition from prejudice, prejudice from common sense and common sense from nonsense while integrating a variety of ideas from diverse groups and disciplines (Cereijo, July, 2002).
- Technopreneurs are skilled in applied creativity, thrive in response to challenge, and look for unconventional solutions. They experience challenges, create visions for solutions, build stories that explain their visions, and then act to be part of the solution. They forge new paths and risk failure, but persistently seek success (Thomas H. Byers, 2001).

Technopreneurship is important for employment creation, local resources, decentralization and diversification of business, promotion of technology, capital formation, promotion of an entrepreneurial culture etc.

### Technology adaptation in apparel industry

The design, manufacture and export of textiles and apparel products is one of the biggest industries in Sri Lanka, and one which plays a key role in advancing the country's economy. The apparel industry of Sri Lanka employs about 15% of the country's workforce, accounting for about half of the country's total exports, and

Sri Lanka is among the top apparel-producing countries in the world relative to its population.

The Global Textile Industry, particularly the Apparel Industry has seen remarkable changes in the past few years. The Garment manufacturing Industry and the Garment Companies in developed countries are now always on a lookout for cheap source of garment production. The days are gone when textile garment industry was concentrated in the consumption hubs of US, EU and other developed countries of the world. The elimination of global export quotas has led to a shift towards low cost countries having strong and established Clothing Industry especially the Asian countries. And Sri Lanka is one among those Asian Countries. As per the Global Textile and Apparel Industry: Vision 2015, World textile and apparel trade is expected to reach US\$805bn by 2015 from US\$650bn in 2010 (Wijendra).

A firm's quick response to compete in the global market depends on the extent of manufacturing technology adopted and its integration of this technology into business operations (Mechling, et. al, 1995). Traditionally, high technology and R&D activities have been less prioritized in the garment manufacturing industry.

In recent days, however, the change in the market trends and fast fashion styles reduced demands for mass production models. It has been reported that apparel executives believe that industry competitiveness depends upon the ability to quickly respond to demand with a variety of practices and better engineering practices (Bailey, 1993).

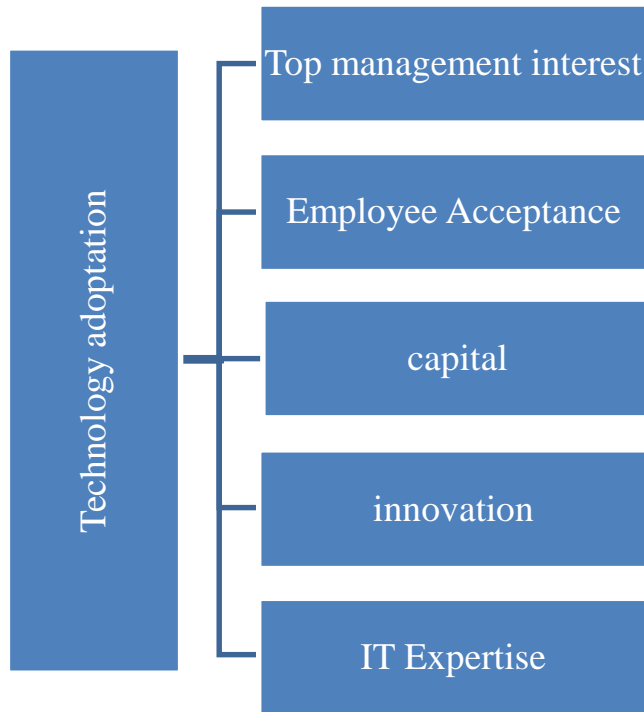
However the size of a firm has been a conventional factor that determines the innovation and performance level of the firm. Larger firms are more likely to adopt new technology than smaller firms and outrun small companies in technology intensity (Rogers, 2003). Being highly adoptive of new technologies, large firms are more eagerly engaged in learning and utilizing new technologies than small firms (Robert G. Fichman, 1999).

Adoption of the technology generally helps to reduce cost and time and it now provides a powerful tool for apparel manufacturers to market their products by presenting their firm profiles on a global scale. This enhances the competitiveness of the garment firms. Competition and environmental changes and the competitive pressure from them may force the firms to seek new technologies

## Methodology

To achieve the mentioned objectives of the research, we selected to conduct the study by means of a qualitative approach. As per the literature suggested, the variables selected for the observation are, top management interest, Employee acceptance, capital allocation to technology, tendency toward innovation. The selected industry to conduct the study is Apparel and we observed the constructs detailed above by means of a telephone conversation. Having decided the criteria, and we were able to categorize the levels of adaptations of the above constructs. Out of 20 large scale apparel companies in Sri Lanka we have selected three companies in our sample. Brandix Lanka (pvt) ltd, Hidramani Garments Ltd, MAS Holdings (pvt) Ltd.

## Data presentation and analysis



### Top management interest

Top management support is critical for creating a supportive climate and providing adequate resources for adoption of new technologies top management.

Their support is more critical for communication technologies since the use of these technologies requires the cooperation.

In Brandix Lanka (pvt) Ltd there is a high interest of management towards technology adaptation. All the processes of the organization are driven through an ERP system. Before four years, has used an ERP system, M3 and presently using M3i+ system. M3i+ system is more efficient than the M3 system and it is used instead of teams such as data entry. Both marketing and production functions of the company running through M3i+ system. Upcoming ERP system, Genesis will integrate production, sourcing and development instead of manual development systems. Top management always tends to adopt new technologies if they have a chance to upgrade the effectiveness, smoothness, cost effectiveness of processes. Adoption of the technology generally helps to reduce cost and time of communication, and the internet now provides a powerful tool for apparel manufacturers to market their products by presenting their firm profiles on a global scale.

In Hirdaramani Group also using ERP system called AX for their all processes in the organization. Heads of the management team directing AX system and also there is a high interest of top management towards technology adaptation. They integrate production, sourcing and from order capacity booking to shipment are working through this system.

MAS Holdings was recognized use of technology as a part of its overall business strategy. MAS partnered with attune Consulting, GT Nexus and MillenniumIT to implement advance technologies within the company due to the decisions made by top management. Attune is a global team of business technology advisors who work with fashion and lifestyle companies to transform their business performance develop customized, innovative solutions that will transform their business success. The partnership with Attune is build up for their processes and systems to gain a strong competitive advantage and brings a synergy of leading business-technology solutions through SAP technology. GT Nexus provide technologies used in logistic services relating to the apparel industry. Partnership of Microsoft Office 365 Enterprise Agreement MilleniumIT h allow MAS staffs' to be more mobile and work remotely which leads to handle workforce more efficiently, and reduce labor time and costs. As a result of using this technology, MAS' IT team no longer need to spend time managing complex upgrades which directly translates into time spent on more strategic projects.

## Employee acceptance

The study observed that without Employee acceptance the success of technology adaptation is in a low level. Therefore employee acceptance is a considerable variable in our study.

In the case of Brandix Lanka (pvt) Ltd any system is integrated by bottom level of employees by assessing the needs. The project management team facilitates for the necessary systems. According to the suggestions of the employees the team designs the value adding attributes to the system.

In Hirdaramani, technology is not that much affecting to their employees. For example they bought a fabric laying machine in recent. They have done fabric laying in manual previously. Due to this new machine efficiency of the company has increased (Fast laying, less time). In that case they gave a better solution to their additional employees. Top management has transferred them to other departments.

In MAS, attitude of middle level employees toward implementing new technology within the premises is higher than the operational level employees.

## Capital allocation to technology

Capital allocation is the most important variable of technology adaptation and based on the amount it is decided to which extent firms adopt the technology.

By considering our sample found that brandix allocates separate budget for technology annually and does not do amendments for new technology projects during the year.

Hidramani group is doing sufficient capital allocation through their annual budget to adopt the technology.

In the case of MAS Holdings, they provide capital requirements necessary for implementing new technology throughout their financial year, if the suggested system is the most appropriate one for the operations to be effective. For example; MAS Holdings invests \$20mn in Attune Consulting to implement SAP technology



## Tendency toward innovation

Firms would like the benefits from the adoption of new innovations to be relevant with the costs associate with the adoption of the innovation the interest for the innovation frequently grows from technology, and communication and institutional administration to commit to adoption of the technology.

According to the Brandix there is a team called “I TEAM” who do innovations of special technology required machines. Through innovations can gain a competitive advantage because can implement machines and equipment at law cost for any requirement other than importing expensive technologies.

In Hirdaramani R&D department is doing an innovation to reduce cost, garment constructions, designs and garment performance. They are submitting new fabric samples during the seasons. As the factory innovations, they are improving the sewing methods and time of the garment sewing. And also they are inventing new machines.

As MAS responded “Innovation to us is not limited by any means to the products we design and manufacture. We focus very strongly on process innovation to ensure that our resource utility is minimized at the highest possible rate of efficiency. Process innovation is also about the innovation of technology in terms of new platforms or exploiting the existing ones to reduce our costs of operation across the board and seek “repeat advantage” to maintain a healthier cost structure” The Company categorizes their innovation under three platforms; those are Sustaining, Transformative and Disruptive. To conduct innovations, MAS has separate department called, Innovation department which proves that higher focus on innovations encourage company to adopt new technology.

## IT expertise

Expertise is an important factor in the adoption of new technologies and has been found to be positively related to adoption Firms that do not have the IT expertise may be unaware of new technologies or may not want to risk the adoption of these technologies.

Brandix is having separate teams such as project management team, M3IS team to overlook the systems all the employees should have technological knowledge to implement and execute relevant system.

There is an IT department in Hirdaramani. They are supporting for all functions of this company. But the ERP system is coordinating by the department of Finance.

As MAS mentioned they also maintaining a separate IT department in order to implementing new technologies and monitoring suitability of existing systems to ensure the survival within the industry.

## Conclusion

The purpose of this study was to investigate the technology adoption status of apparel industry of Sri Lanka and to examine the effects of organizational variables on the level of technology adoption. The organizational variables that were examined include, top management interest, employee acceptance, capital allocation to technology, tendency toward innovation and the IT expertise.

The technology continues to evolve as an important tool for implementation of online solutions and to access global market information anytime, anywhere. This study also revealed the relative significance of the proposed factors in predicting the level of a firm's technology adoption.

The results indicated that the top management's commitment and technical skills have significant effects on the technology adoption level. In many firms, the primary decision-maker in areas like technology adoption is the owner or top management of the business and his or her vision for the use of these technologies determines the level of support for the technology adoption. It is possible the apparel technologies are not complex enough to require technical support and thus may not need high skilled human resources. Since in the most of the cases medium level employees are having significant knowledge in technology and their knowledge and acceptance is more important than lower level employees. Cost of capital had a significant effect on technology adoption. It is noted that firms were ready to adopt the best practices in technology as long as they had adequate capital. Expertise is an important factor in the adoption of firms that do not have the IT expertise may be unaware of new technologies. The greater the IT expertise available in the organization the more likely communication technologies will be adopted.

The use of computers and modern communication technologies can bring in significant changes to the work practices. The innovation directly affects the

competition. The firms more likely to do innovation have more tendencies to adopt new technologies.

New information technologies have opened up many new opportunities for businesses in apparel. To gain competitive advantage and step toward the success the businesses are adopting new technologies and above variables cause for adaptation of technologies in the industry.

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