WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Green Innovation Practices and Its Impact on Organizational Performance: Evidence from Apparel Industry of Sri Lanka

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DOI: https://doi.org/10.55248/gengpi.2022.3.9.18

A B S T R A C T

Innovation in the manufacturing sector has been extensively investigated and has demonstrated a long-standing association with organizational performance, particularly in today sophisticated and technologically driven world. Green innovation has recently attracted attention in the innovation scene, particularly in the apparel industry across efforts. Moreover, green innovation initiatives adopted in the apparel sector have also been researched well, however, their impact on organizational performance is seen as a research gap in the current study. As a result, the study's objectives are to identify the factors that affect organizational performance in green innovation and to assess the impact of green innovation on organizational performance. With the identification of green innovation being a driver of organizational performance, the research conducted through this study has displayed that organizational performance can be explained through a multitude of factors such as financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture. Hence it is recommended to be analyzed thoroughly and implement from a governmental level itself to ensure that the relevant support towards sustainability and green innovation is attained. As such, more manufacturing efforts in terms of supplier basis need to be formed which would be sufficient for manufacturers to enable production. This will allow enterprises in achieving economic growth while coexisting in a harmonized manner with the environment.

Keywords: Green innovation, Organizational performance

1. Introduction

Innovation in the manufacturing sector is a widely researched area and has proven a longstanding relationship with performance in organizations, especially in this developed and technologically driven world (Lukitaruna, 2018). Such innovative practices have been emphasized across the world in the apparel manufacturing sector, from the adoption of new technology to changes in supply chain processes along with products and process improvements (Xie et al., 2022). As such, various initiatives across analytics, robotics, 3D printing, artificial intelligence, cloud computing etc. have been adopted across the apparel industry in the world (Wang et al., 2021). The increasing rates of adoption have been seen due to its ability to outperform the competition by offering better products to customers, which would in return cater for higher sales and profitability of the organization (Ar, 2012).

Similar to the identification of the importance of innovation, there has also been increasing attraction towards sustainability through more attention being paid by consumers to the people and planet we live in. In view of combining these two important concepts, it has given birth to green innovation in relation to innovation in green products and processes (Alhadid & Rumman, 2014). Out of the innovation landscape, green innovation has been attracting attention in the recent past, especially in the apparel industry across initiatives such as energy saving, pollution management, recycling, upcycling, product design etc (Ar, 2012). Many researchers have identified have green innovation has a direct impact on environmental performance along with the competitive advantage of an organization, as environmentally rewarded companies are considered to be having a higher competitive advantage. This enables the organization in reaching higher overall performance (Lukitaruna, 2018).

Existing literature depicts that the impact of green innovation on organizations has been widely researched by many scholars over the years and many of the studies have concluded that there is a significant positive impact that green innovation has on organizational performance (Ar, 2012). There are multiple

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studies which have been evaluated in consideration of the manufacturing sector across the world and how it is impacted by green innovation, mainly across the product manufacturing space where green innovation is widely evident (Lukitaruna, 2018). Moreover, green innovation initiatives adopted in the apparel sector have also been researched well, however, their impact on organizational performance is seen as a research gap (Alhadid & Rumman, 2014). As such, with the application of green innovation being high in the manufacturing sector (Fernando et al., 2020), this study intends on analysing the impact of green innovation on organizational performance in the apparel industry of Sri Lanka (Wanniarachchi & Ratnajeewa, 2018). This study would be significant for the personnel employed in the apparel sector in Sri Lanka along with technology service providers who would be able to extract opportunities to be catered to across the apparel industry (Nadesan, 2020).

It has been identified that green innovation could be applied across products as well as processes which have been adopted across the apparel industry as seen through global and local examples (Wang et al., 2021), whereas organizational performance is determined through multiple factors which mostly relate to factors that a business views for performance such as financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture (Alhadid & Rumman, 2014; Xie et al., 2022; Lukitaruna, 2018). As a result, the following research objectives would be addressed through this study.

- Identification of factors that determine organizational performance in green innovation.
- Evaluation of the impact of green innovation on organizational performance.
- Recommendation of strategies of green innovation which could be adopted in enhancing organizational performance.

In serving the above objectives and achieving the research purpose, the following hypothesis would be evaluated.

- H01: There is no significant impact of green innovation on financial performance.
- H02: There is no significant impact of green innovation on competitive advantage.
- H03: There is no significant impact of green innovation on environmental performance.
- H04: There is no significant impact of green innovation on operational performance.
- H05: There is no significant impact of green innovation on talent development.
- H06: There is no significant impact of green innovation on organizational culture. introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 9.5 pt. Here follows further instructions for authors.

2. Literature Review

The growth of the global economy has given rise to contradictions being made between the social economic system and the ecosystem. The global ecosystem goes through many challenges in which environmental-related problems are a major concern (Bhatia, 2021). In this context, maintaining pressure from the ecosystem and protecting the environment we live in, whilst ensuring economic development has become a key area of concern that requires attention in this new age. Fashion in the world is valued at around US$3.5 trillion and it is one of the largest business sectors across the globe (Cera and Kusaku 2020). However, it is also known for the most amount of waste being generated at a rate of 20% of global water waste and 10% of carbon emissions. It has also been identified that at least 60% of clothing which are produced ends up being scrapped within a few years of being manufactured (Hassan et al., 2017). Therefore, the apparel and textile industry is considered the largest polluting industry across the globe which has been identified mainly due to the developments made in “fast fashion”. Therefore, a key observation which has been made regarding the apparel industry as a whole is that it requires strong sustainable fashion product solutions, without which these trends will only keep on continuing (Xie et al., 2022).

Adoption of sustainability is also seen across the globe with brands such as Levi’s, H&M, and Patagonia accepting green practices as a part of their sustainability strategy and branding strategy as well. Through this, more companies in this industry are exploring environmental performance in view of improving efficiency, profitability reputation and brand in the market. This situation is no different in the Sri Lankan context where key players in the industry such as MAS, Brandix, Hirdaramani etc. are increasingly adopting sustainability initiatives in keeping up with market trends (Fernando et al., 2020).

2.1 Green innovation

Trends in sustainability which are increasingly demanded from the consumer have given rise to the application of green innovation in many industries with special emphasis on the apparel manufacturing sector (Xie et al., 2019). The Sri Lankan apparel manufacturing sector is led by a few key players with manufacturing plants across the world and serving consumers mainly from the Western markets where awareness of sustainability is much higher. As a result, this research has been formulated through the application of green innovation in the apparel sector in identifying its impact on organizational performance (Tariq et al., 2017).

Green innovation also known as eco-innovation is a process in which contributions to the development of products and services with a key focus on reducing environmental risks such as pollution, resource exploitation, carbon emission etc (Begum et al., 2021). Therefore, it would refer to all types of innovation which could be directed at minimizing environmental damage whilst ensuring that natural resources are utilized in the most effective manner (Khan et al., 2021). There are various benefits that an organization especially in the apparel manufacturing sector can benefit from through the adoption of green innovation such as improving the competitiveness of the organization resulting in increasing brand reputation, image along with sales revenue through increased customer attention. Moreover, it would also bring about the economic performance of the organization along with environmental performance. Reduction in energy usage, waste recycling, controlling of pollution, sustainability of resources along with green product designs which may be generated through clothing designed through recyclable material would be key factors of consideration.

2.1.1 Product and process innovation

It is evident that green innovation can be initiated in the form of product innovation along with process innovation as well, where the latter would mean the innovation initiated across a procedure, a service or a system. Therefore, green innovation has the ability to innovate the entire product life cycle in the development of green offerings to the organization, which results in considerable support provided across economic and environmental aspects (Tariq et al., 2017). As such, the importance of green innovation in the apparel manufacturing sector would be due to an increase in economic and social performance where a reduction in waste would lead to a reduction in cost along with other inefficiencies. It would also attract new customers where it has been stated that 66% of respondents on the Nielsen Global Corporate Sustainability Report are willing to pay a higher amount for sustainable products which could be highly applicable in clothing and accessories such as activewear as researched by Lukitaruna (2018). Adoption of green innovation within manufacturing processes would lead to minimization of production time and costs, whilst providing a stronger market position to the firm which would provide a better edge over the competition. It is also important to note that green innovation results in the creation of breakthroughs where one of the key examples is Patagonia, a key activewear brand across the world and which is also manufactured out of Sri Lanka, which has been able to develop repair centres in decreasing carbon footprint. Therefore, it is evident that green innovation has a key role in enabling growth which is environmentally sustainable as it displays that both product and process-driven green innovation leads a manufacturing organization towards various types of improvements which impact higher performance (Tariq et al., 2017).

2.2 Organizational performance

It is evident that the various benefits that green innovation creates within a business; it leads to organizational performance. This is through the increase of brand reputation, market positioning, reduction of waste, and development of breakthroughs which result in longer-term benefits for the business along with its ability in creating competitive advantage as well (Tariq et al., 2017). The capabilities that an organization has depends heavily on the environment that it operates in whereas, in the context of environmental sustainability, it could involve both internal and external pressure in building and adapting suitable business activities. Therefore, with constant demands made from sustainability as a concept from the external market, especially in the eyes of consumers, organizations are driven in ensuring that all required capabilities along with resources are implemented to ensure that the required demand is catered to (Cera and Kusaku 2020). In doing so, a key enabler of driving such operations for an organization would be in ensuring that the required levels of benefits in the form of organizational performance are attained. Moreover, it has also been identified that organizations generally adopt green-related initiatives only when they believe that green innovation and sustainability practices would lead to some form of financial gain, improvements in operations along with enhancement in competitive advantage. Implementation of green innovation would likely result in the improvement of the overall environmental performance of the company, which would drive the overall performance of the company as well. Therefore, through this evaluation, it could be noted that green innovation is closely knitted with organizational performance (Lukitaruna, 2018).

As such, the impact of green innovation on organizational performance has been discussed and widely commended by many scholars. However, there have also been contrasting views presented by certain scholars that the measurement of green innovation and its impact on the performance of a business forms difficulties as benefits gained may be spread out over a longer period of time (Lukitaruna, 2018). Such researchers have also pointed out that implementation of green innovation practices requires careful planning, adequate resourcing and expertise along with sound financial backing from the organization, without which such green innovation initiatives are able to be implemented. Financial support is a key component in this aspect because it is one of the factors which discourages most corporations due to heavy investment across aspects such as the adoption of technologies, training and development, certifications, embedding physical process-related aspects etc (Xue et al., 2019). which have clear impacts on the decisions made by the management of an organization in adopting green innovation as a concept. However, with the demand that is driven from the consumer's end in the market, it is evident that organizations in the manufacturing sector that have high rates of pollution are compelled to explore different options of implementing green innovation within their products and processes as stated by Caracuel and Ortiz-de-Mandojana (2013). Therefore, with the identification of the importance of green innovation in the manufacturing sector along with its great impact on organizational performance, a few factors that determine organizational performance have been identified which have also been evident as having a relationship with green innovation and its impact on businesses (Taylor, 1992).

2.2.1 Financial performance

Financial performance is one of the most discussed and critical components which determine the performance of a business as indicators such as growth in revenue and profitability along with reduction of costs are evident through the financial analysis of a company (Hart, 1997). As green innovation results in the elimination of pollution and reuse of waste material, it could generate opportunities for the business in cutting down on costs through profitability would increase (Taylor, 1992; Aguilera-Caracuel and Aguilera-Caracuel, 2013). Moreover, through aspects such as the generation of differentiating products, the possibility of accessing new markets, higher opportunities across sales etc. it would also increase revenue as well (Ambec and Lanoie, 2008).

2.2.2 Competitive advantage

Green innovation has been adopted in the manufacturing sector due to various demands made by the market along with the space of sustainability. By catering to the needs of the market and by enabling innovative ideas through products and processes, better attraction can be gained from the market (Tariq et al., 2017). With higher investments required, and the attainment of market attraction through the implementation of green innovation-related ideas, the organization will be able to gain a competitive advantage by being the first in the market. The higher competitive advantage would result in increased demand and higher organizational performance (Khan et al., 2021).

2.2.3 Environmental performance

Environmental performance is the ability in which manufacturing plants are able to cater for aspects such as reduction in air emissions, management of waste, reduction in consumption of hazardous and toxic material, reduction in environmental accidents etc (Caracuel and Ortiz-de-Mandojana, 2013). This would mean that it would improve the environmental outlook of the business, resulting in a better brand image through increased market positioning as a driver of sustainability. With green innovation being practised, it could impact all aspects of a business as the main goal would be in ensuring that the new innovation would be environmentally sustainable (Zhu et al., 2008), through which the environmental performance aspect of the organization would increase. Through this, higher organizational performance could be expected.

2.2.4 Operational performance

Operational performance relates to the capabilities of the organizations such as factories and plants that are required for production and delivery to customers in an efficient manner. This aspect would consist of increasing rates of goods delivered on time, a decrease in inventory levels, a decrease in volume and rate of scrap generated from production, an increase in product quality and line, and improved capacity utilization (Zhu et al., 2008). These could be identified as efficiencies where productivity enhancements are embedded in a manufacturing setting which would lead to various benefits for the company such as reduction in costs, reduction in lead time to increase, increased customer satisfaction and more. As such, it is evident that green innovation would impact operational performance through which organizational performance is attained (Khan et al., 2021).

2.2.4 Talent development

It is evident that developing talent within employees would sustain organizational performance through the sustaining of knowledge and strategies that are required for improvements and changes to be made in the company (Alhadid and Aburumman, 2014). Therefore, it would be a driver in which talented employees are also able to be recognized so that potential future leaders of the company can be groomed. In view of this, the practice of green innovation would inculcate enhanced knowledge and skills within employees through training and development which would enable the employees in working efficiently in a sustainability-driven organization (Xue et al., 2019). They could contribute towards initiating new green innovation product ideas, process re-engineering contributions along with embedding green practices across the routine tasks that are performed. This would result in higher employee performance training and development backed by knowledge and skills that would enhance the level of contributions made to the organization and result in higher organizational performance (Xie et al., 2022).

2.2.5 Organizational culture

Organizational culture is associated with performance based on culture being a positive influence on an employee's attitudes and behavioural patterns. Therefore, through the practice of a sustainability-driven culture emphasized green innovation initiatives in the organization's product development and process enhancement, an employee's thinking could be influenced to enable better ideas, models, frameworks etc (El-Kassar and Singh, 2019). which would fuel higher performance. A sustainability-driven organization culture would enable the required level of thinking which would enhance the embedding of green innovation and green practices in the organizations and its employees' daily lifestyles. This would enhance organizational performance solely from the contributions made by employees. Moreover, organizational culture is a strong driver which plays a significant role in the organizational strategy, which results in higher organizational performance (Wang et al., 2021).

In view of the above factors which have been identified as crucial determinants of organizational performance are clear drivers of green innovation in both product and process have driven green innovation.

3. Research Methodology

3.1 Research strategy and approach

In view of evaluating the impact of green innovation on organizational performance in the apparel manufacturing sector in Sri Lanka, a pragmatism research philosophy has been adopted based on the research onion model by Saunders et al. (2019). This is because it has allowed the researcher in using ideas, theories and research results put forward by authors on the subject. Through this, practical solutions are intended to be explored as well. Adoption of the deductive approach has ensured that review of existing literature in forming ideas and understanding of variables applicable, which would be supportive in testing the data gathered. This approach has also been assistive in the formation of hypotheses and testing of the same through the identification of related variables backed by research (Saunders et al., 2019).

In testing the hypothesis and deriving a conclusion from the study, a survey questionnaire would be conducted in gathering data from a predetermined set of people which would be a research strategy. As such, the questionnaire would be distributed among 100 participants would including employees currently employed and serving in the apparel manufacturing sector of Sri Lanka. Through this research choice, the data gathered would be focused on being quantified where the relationships would be attempted at being determined based on the independent and dependent variables identified through the study. Therefore, a quantitative method would be adopted. A cross-sectional time horizon would be applicable as the data gathered would be focused on the completion of this specific study only. As such, a timeframe based on a one-time task approach is applicable (Saunders et al., 2019). The survey questionnaire would be distributed through an online mode, such as by adopting Google Forms where a Likert Scale method based on a 5-point scale would be utilized. This scale would be provided with guidelines for the participants for rating a set of questions and statements targeted at determining the impact that green innovation has on organizational performance across apparel manufacturing organizations. Therefore, the survey questionnaire would act as the primary source of the study which could be identified as a structured questionnaire. Moreover, other secondary sources would also be adopted in this study based on published

research material that has been put forward by various other scholars with regard to this subject. Such a secondary research approach has been adopted in reviewing various literature and identifying the variables applicable to the study (Saunders et al., 2019).

The data of the study has been collected on the basis of a set of steps. As the first step of the process, an analysis of the research topic supported by research and a review of information available publicly has been undertaken. This detailed research has assisted the researched in understanding various viewpoints on the topic and it has been pivotal in the identification of the variables to be adopted for this study for analysis. Secondly, the researcher has taken initiations in involving the target population of the study through which a sample of 100 has been adopted in gathering their thoughts and inputs on the subject. This has been through the survey questionnaire which has been distributed inclusive of a structured set of questions and statements. Through the inputs gathered, an approach to deriving similarities between the literature reviews and the inputs gained has been conducted. This has enabled the researcher in drawing out similarities and contrasting viewpoints. Therefore, an exploratory study has been formulated where the findings of the research have been related to the research questions and objectives predefined.

3.2 Conceptual framework

The conceptual framework adopted for the study in view of determining the relationships between the independent and dependent variables is as follows.

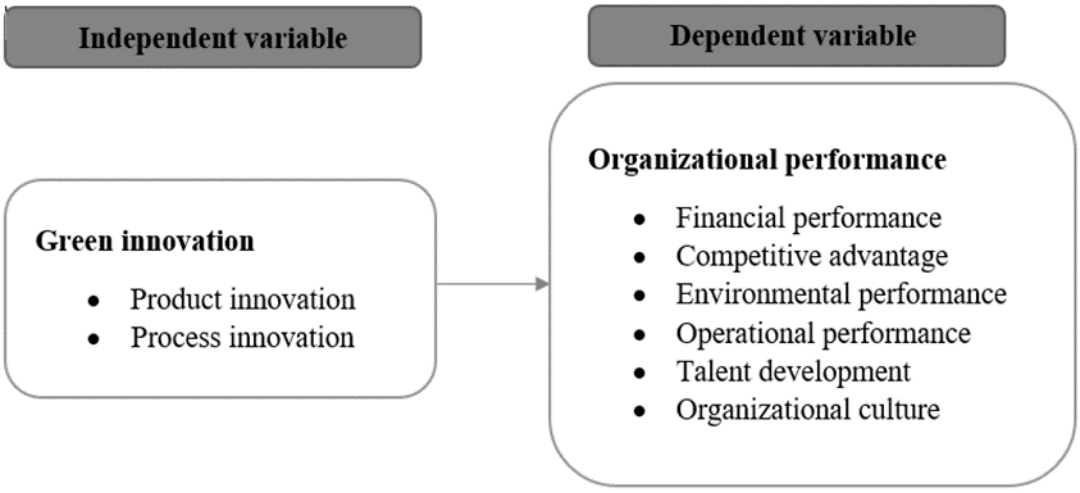

Figure 1: Conceptual framework

Source: Author's work

In rationalization of the variables as set out in the above framework, the variables have been identified and adopted solely based on the empirical findings which have been reviewed through the literature review analysed above. As such, the variables of green innovation which include product and process innovation along with organizational performance which includes financial, environmental, operational performances, competitive advantage talent development and organizational culture have been identified as relevant to this study. Hypothesis, as set out earlier in this study, has been derived through this study based on the above variables and will be intended at being subject to quantitative analysis in determining the relationships.

3.3 Method of data analysis

The quantitative analysis will be conducted based on a Microsoft Excel analysis along with an SPSS analysis. Microsoft Excel will be adopted in the analysis of demographic-related data whilst SPSS would be adopted in performing the regression analysis in evaluating the relationships as set out in the hypothesis. Moreover, Cronbach's Alpha will be used to determine the reliability (Bonett and Wright, 2014). The person's correlation coefficient test will be used in measuring the statistical relationships that are evident between variables which may be continuous. Regression testing would be applied in identifying the impact of the independent variable on the dependent variable (Saunders et al., 2019).

3.4 Ethical consideration

Ethical considerations applicable to primary research material would be applied in this study as well where the researcher will ensure that the anonymity of the study participants would be maintained at all times. As such, the data gathered would not be divulged to any third party and they will not be used for any other purpose than the purpose of this research. Furthermore, data would be presented accurately to the researcher's best knowledge whilst ensuring that transparency is maintained.

4. Findings and Analysis

As displayed in the below table, Cronbach's Alpha displays a value of 0.843 and could be identified as greater than 0.7. Therefore, this can be considered acceptable. This means that internal consistency is satisfactory as evident within the indicators and the variables. This shows that the study can be proceeded

with.

Table 4.1 Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.843	8

Moreover, it is evident that over 87% of the participants of the survey has over 1 year of experience in the apparel industry, and 62% have over 3 years of experience. This displays that there is more weightage in the accuracy and the validity of the information presented in the survey.

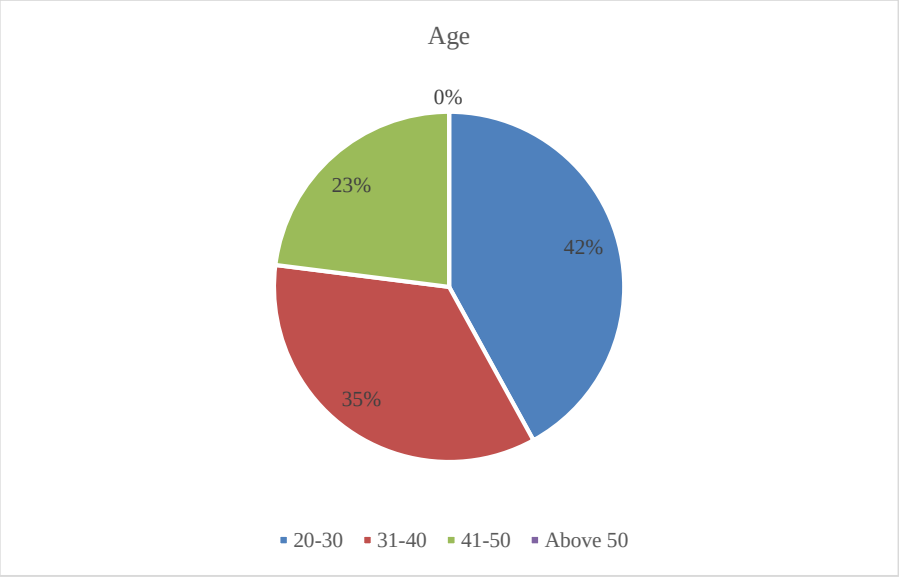

Figure 4.1 Age

Source: Author's work based on questionnaire responses

In the evaluation of the age of the participants, 58% are 31 years and above and could be assumed that experienced and mature participants have responded to the questionnaire.

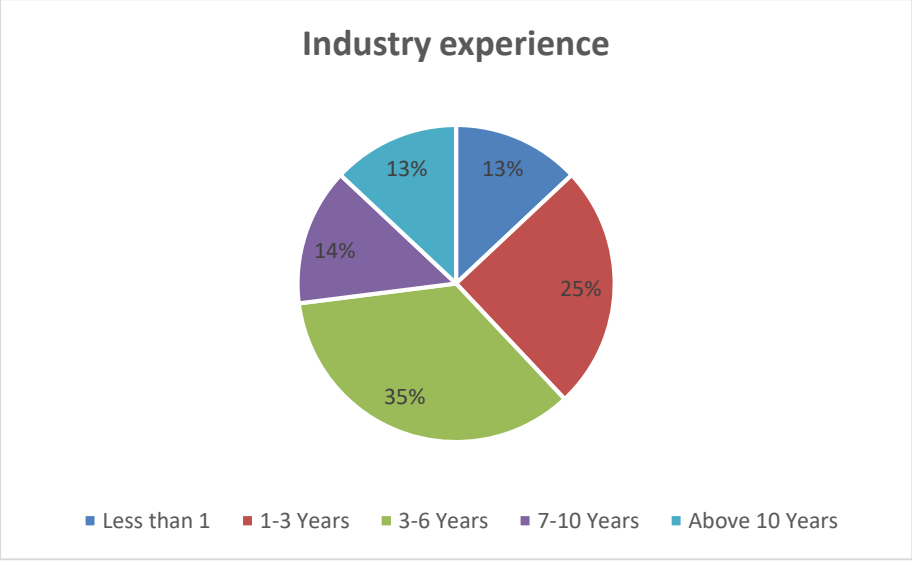

Figure 4.2 Industry experience

Source: Author's work based on questionnaire responses

Further validity could be attained based on the employment category of the participants where over 92% of the employees are over Assistant Manager and above. Therefore it could be noted that they contain sufficient knowledge regarding green innovation and its impact on organizational performance.

Figure 4.3 Employment category

Source: Author's work based on questionnaire responses

It is evident through the below chart, that 80% of participants' organizations adopt green innovation in their operations. However, 14% have stated that they do not adopt green innovation which displays that further improvements could be made in the apparel industry of Sri Lanka. Furthermore, 6% have stated maybe which displays the lack of awareness of such participants on the subject in terms of their application to their organizations.

The above responses display that the responses received and analyzed through the questionnaire are relevant due to the level of maturity of the respondents based on industry experience and age, along with their employment category. Therefore, it could be noted that a strong set of opinions which are applicable to green innovation can be attained through this study with regard to the apparel industry of Sri Lanka.

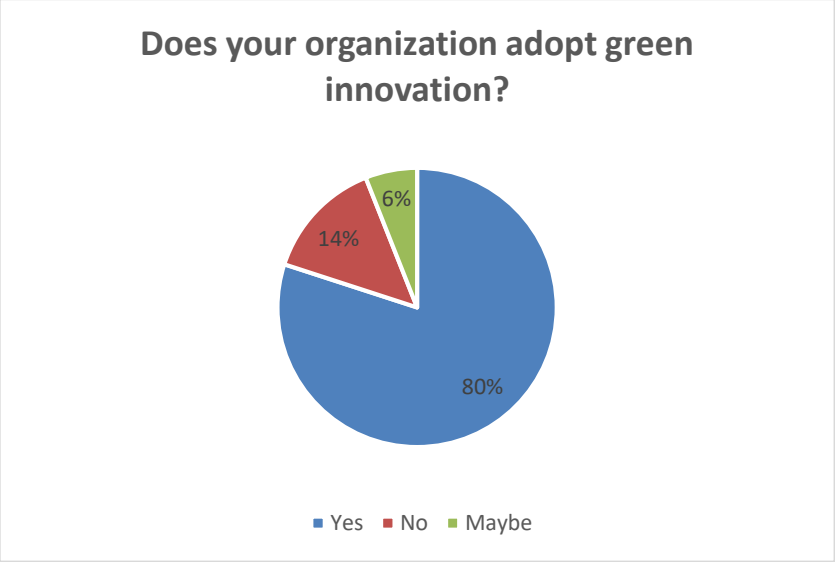

Figure 4.4 Adoption of green innovation in organizations

Source: Author's work based on questionnaire responses

However, it could be noted that all participants agree that green innovation is an important aspect to be adopted in manufacturing organizations, displaying their awareness on what green innovation is in a manufacturing context.

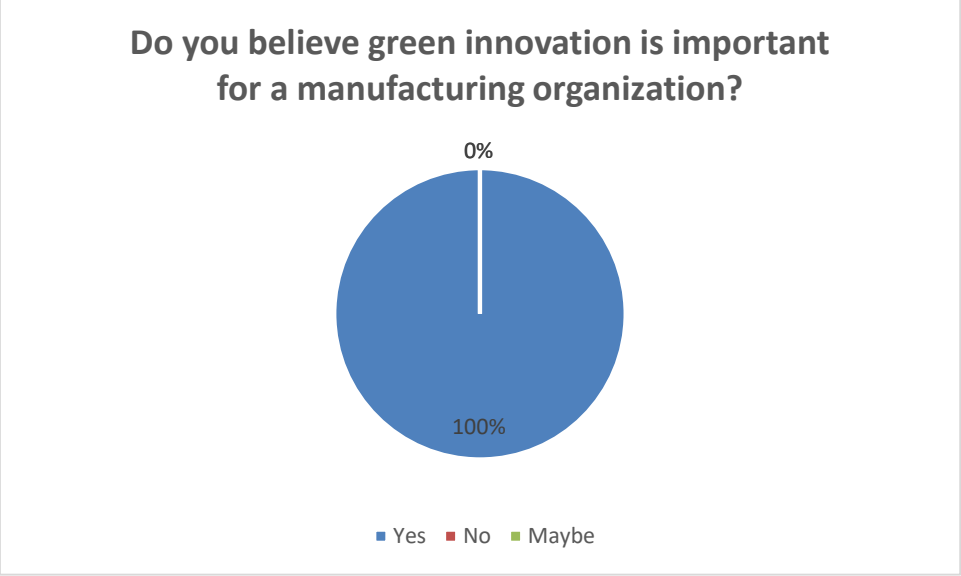

Figure 4.5 Importance of green innovation in manufacturing organizations

Source: Author's work based on questionnaire responses

Given the hypothesis which has been set out above, the correlations between each variable could be analyzed as follows.

Table 4.2 Correlations

Correlations

		Greenproductinnovation	Greenprocessinnovation	Financialperformance	Competitive advantage	Environmentalperformance	Operational performance	Talentdevelopment	Organizational culture
Greenproductinnovation	Pearson Correlation	1	.879**	.497**	.193	.371**	.183	.279**	.327**
	Sig. (2-tailed)		.000	.000	.054	.000	.069	.005	.001
	N	100	100	100	100	100	100	100	100
Greenprocessinnovation	Pearson Correlation	.879**	1	.354**	.257**	.330**	.225*	.232*	.289**
	Sig. (2-tailed)	.000		.000	.010	.001	.024	.020	.004
	N	100	100	100	100	100	100	100	100
Financialperformance	Pearson Correlation	.497**	.354**	1	.367**	.488**	.348**	.464**	.468**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000
	N	100	100	100	100	100	100	100	100
Competitiveadvantage	Pearson Correlation	.193	.257**	.367**	1	.312**	.351**	.355**	.200*
	Sig. (2-tailed)	.054	.010	.000		.002	.000	.000	.046
	N	100	100	100	100	100	100	100	100
Environmentalperformance	Pearson Correlation	.371**	.330**	.488**	.312**	1	.370**	.711**	.746**
	Sig. (2-tailed)	.000	.001	.000	.002		.000	.000	.000
	N	100	100	100	100	100	100	100	100
Operationalperformance	Pearson Correlation	.183	.225*	.348**	.351**	.370**	1	.358**	.420**
	Sig. (2-tailed)	.069	.024	.000	.000	.000		.000	.000
	N	100	100	100	100	100	100	100	100
Talentdevelopment	Pearson Correlation	.279**	.232*	.464**	.355**	.711**	.358**	1	.703**
	Sig. (2-tailed)	.005	.020	.000	.000	.000	.000		.000
	N	100	100	100	100	100	100	100	100
Organizationalculture	Pearson Correlation	.327**	.289**	.468**	.200*	.746**	.420**	.703**	1
	Sig. (2-tailed)	.001	.004	.000	.046	.000	.000	.000	
	N	100	100	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source : Survey data

Table 4.3 Hypothesis

Hypothesis	Pearson Correlation	Significance	Hypotheses acceptance
$H1_0$: There is no significant impact of green product innovation on financial performance. $H1_1$: There is a significant impact of green product innovation on financial performance.	.497	.000	$H1_0$: Accepted $H1_1$: Rejected
$H2_0$: There is no significant impact of green process innovation on financial performance. $H2_1$: There is a significant impact of green process innovation on financial performance.	.354	.000	$H2_0$: Accepted $H2_1$: Rejected
$H3_0$: There is no significant impact of green product innovation on competitive advantage. $H3_1$: There is a significant impact of green product innovation on competitive advantage.	.193	.054	$H3_0$: Accepted $H3_1$: Rejected
$H4_0$: There is no significant impact of green process innovation on competitive advantage. $H4_1$: There is a significant impact of green process innovation on competitive advantage.	.257	.010	$H4_0$: Accepted $H4_1$: Rejected
$H5_0$: There is no significant impact of green product innovation on environmental performance. $H5_1$: There is a significant impact of green product innovation on environmental performance.	.371	.000	$H5_0$: Accepted $H5_1$: Rejected
$H6_0$: There is no significant impact of green process innovation on environmental performance. $H6_1$: There is a significant impact of green process innovation on environmental performance.	.330	.001	$H6_0$: Accepted $H6_1$: Rejected
$H7_0$: There is no significant impact of green product innovation on operational performance. $H7_1$: There is a significant impact of green product innovation on operational performance.	.183	.069	$H7_0$: Accepted $H7_1$: Rejected
$H8_0$: There is no significant impact of green process innovation on operational performance. $H8_1$: There is a significant impact of green process innovation on operational performance.	.225	.024	$H8_0$: Accepted $H8_1$: Rejected
$H9_0$: There is no significant impact of green product innovation on talent development. $H9_1$: There is a significant impact of green product innovation on talent development.	.279	.005	$H9_0$: Accepted $H9_1$: Rejected
$H10_0$: There is no significant impact of green process innovation on talent development. $H10_1$: There is a significant impact of green process innovation on talent development.	.232	.020	$H10_0$: Accepted $H10_1$: Rejected
$H11_0$: There is no significant impact of green product innovation on organizational culture.	.327	.001	$H11_0$: Accepted $H11_1$: Rejected

$H11_1$: There is a significant impact of green product innovation on organizational culture.			
$H12_0$: There is no significant impact of green process innovation on organizational culture. $H12_1$: There is a significant impact of green process innovation on organizational culture.	.289	.004	$H12_0$: Accepted $H12_1$: Rejected

Source : Author constructed

As per above, it is evident there is no correlating impact of green product innovation and green process innovation on any of the independent variables as the Pearson correlation value is less than 0.5 for all relationships. However, all variables have a significant relationship as evident through the significant levels of less than 0.05 for all variables, apart from green product innovation and competitive advantage along with green product innovation and operational performance. All relationships have evidently been recorded with positive relationships as well, which depicts that there may be a moderate level of an impact between the chosen variables of the study. Moreover, in developing a model for the impact of green innovation on organizational performance, the following has been derived through regression analysis.

Table 4.4 Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.446[a]	.199	.182	.813

a. Predictors: (Constant), Greenprocessinnovation, Greenproductinnovation

Source : Survey data

The above model summary explains that the factors adopted for the study and its level of interpretation can be explained at a rate of 19.9%. As such, the impact of green innovation on organizational performance can be explained only at 19.9% through the factors adopted for this study. As such, there are other factors which explain the balance of 80% in explaining this relationship and the impact of the broad variables further. This could be understood and taken for further analysis.

Table 4.5 Coefficients

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.422	.221		6.444	.000
	Greenproductinnovation	.389	.227	.326	1.713	.090
	Greenprocessinnovation	.170	.247	.131	.687	.493

a. Dependent Variable: Organizational performance

Source : Survey data

As such the following model could be proposed for this study.

This model could be understood as not significant based on the above coefficients and their significant values recorded and based on the responses received as a collective for organizational performance which is explained by the factors of financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture. This would mean there may be other factors that have not been adopted for the study which could have explained the model better.

5. Conclusion and Recommendations

In conclusion, it could be noted that based on the literature there is ample evidence that suggests that green innovation has a positive impact on organizational value. Green innovation is explained by the process as well as product innovation which is identified as applicable, especially in the manufacturing sector. In relation to the apparel manufacturing sector of Sri Lanka, it is evident that there are approaches initiated across process improvements and product ideas which drive sustainability in such organizations. Such aspects have assisted in increasing the market awareness of organizations heavily and have contributed

to the performance levels of the organization as well. With the identification of green innovation being a driver of organizational performance, the research conducted through this study has displayed that organizational performance can be explained through a multitude of factors such as financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture. This study has identified a relationship of each of these factors with green innovation as well, thereby truly explaining the impact of green innovation on organizational performance. In summary, it could be noted that higher financial performance is able to be attained through cost reduction initiatives driven by green innovation. Competitive advantage could be attained through market positioning and delivery of customer needs through green innovation initiatives. Environmental performance could also be increased as higher compliance with sustainability is attained through the adoption of green innovation initiatives. Operational performance is enhanced through efficiency and productivity drivers that are fuelled through green innovation initiatives such as reduced wastage, recycling material etc. Talent development is another aspect which is fuelled by green innovation, where enhanced knowledge and skills would develop the employees of the organization and result in higher organizational performance as the employees would be able to cater for green innovation-related initiatives of the organization successfully. Moreover, organizational culture is another aspect which fuels a stronger organizational performance through the formulation of positive attitudes and beliefs within the minds of employees, where the organizational culture could be shaped successfully to fit a culture of sustainability and green innovation. Such areas have been identified successfully through the literature review conducted above. Each of these factors has also been responded to as key aspects through the survey participants where the reliability of the responses received through this study is explainable through the positions, ages and industry experience that the participants hold.

However, even though the literature suggests that green product innovation and green process innovation have impacts on each of the above factors of organizational performance such as financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture, the statistical analysis has presented a contrasting view. This study has been able to statistically prove that all variables have positive relationships with one another, which would mean that the increase in one variable would impact the increase in the other variable. However, the factors have not been able to produce significant levels of relationships through the statistical analysis conducted above. This would mean that the level of impact that each variable would have on the other is not significant enough to be considered for this study. It has been identified that this could be due to other factors which may explain organizational performance better apart from the ones adopted for this study in relation to green products and green process innovation. Therefore, it could be noted that future research areas can be extracted through this study, where further research on factors depicting organizational performance could be adopted in testing the impact of green innovation on it. As such, a holistic view of a typical organization in evaluating how organizational performance means could be considered in testing the relationship between green products and green process innovation with organizational performance.

Therefore, in view of the objectives set out for this study, the following could be evaluated.

- Identification of factors that determine organizational performance in green innovation.

Six factors namely financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture have been identified as significant factors which impact organizational performance related to green innovation.

- Evaluation of the impact of green innovation on organizational performance.

The factors of financial performance, competitive advantage, environmental performance, operational performance, talent development and organizational culture do not have significant relationships with green product innovation and green process innovation. This is evident through the hypothesis testing carried out in the previous chapter.

- Recommendation of strategies of green innovation which could be adopted in enhancing organizational performance.

In terms of recommendations which could be initiated for organizations in the apparel manufacturing sector, one of the key implications could be through the adoption and implementation of relevant policy implications. This is recommended to be analyzed thoroughly and implemented from a governmental level itself to ensure that the relevant support towards sustainability and green innovation is attained. As such, more manufacturing efforts in terms of supplier basis need to be formed which would be sufficient for manufacturers to enable production. This will allow enterprises in achieving economic growth while coexisting in a harmonized manner with the environment. The government could take initiate in encouraging corporates in enhancing green innovation and its capabilities. Moreover, opportunities from western countries where higher demand for the sustainable product is generated need to be sought at a governmental level to ensure that more demand is created for organizations in Sri Lanka to continue manufacturing. This will assist companies in negotiating various goods purchased from suppliers due to volume-based product purchasing. Apart from governmental support, it is also important for companies in exploring their governance and compliance-related functions to ensure that the correct approaches are being undertaken to enable green innovation. For example, this could be fuelled through technology embedment within processes so that manual processes, documentation and other aspects are eliminated to fuel green innovation. In this manner, the corporate governance-related aspects also need to be paid better attention to by companies to actively improve and create better environments across the internal and external spaces to assist green innovation. This will ensure that higher organizational performance is

attained, thereby being able to cater for the key requirements of the company through green innovation, whilst being environmentally sustainable. Moreover, based on the awareness-related aspects as understood from the survey questionnaire, organizations also need to promote aspects of green innovation among their employees to enable higher knowledge on the subject is distributed. Through such initiatives, more ideas and encouragement to work towards making a sustainable culture within the organization could be expected from employees.

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Appendix 1: Survey Questionnaire

Survey - Impact of green innovation on organizational performance - A study of the apparel industry of Sri Lanka

Dear Respondent,

I am a lecturer at the University of Sri Jayewardenepura. This study aims to identify the impact of green innovation on organizational performance in the context of the Sri Lankan apparel industry.

This survey will take a few minutes of your time and your participation in this would be completely voluntary and anonymous. The data gathered through this survey will be confidential and the questionnaire will be used only for academic research purposes only.

Thanking you in advance,

Dasuni Pandthasekara
Lecturer
Department of Commerce
Faculty of Management Studies and Commerce
University of Sri Jayewardenepura

Section 1:

Please select the most appropriate response.

1	**Gender**	Male	Female	Cannot Say		
2	**Age**	20-30	31-40	41-50	Above 50	
3	**Work experience in the apparel industry**	Less than 1	1-3 Years	3-6 Years	7-10 Years	Above 10 Years
4	**Employment category**	Executive	Assistant Manager/Manager/Senior Manager	Head of Department	AGM/GM	Director/CEO
5	**Highest Education level**	Advanced Level education	Diploma	Undergraduate	Postgraduate and above	
6	**Does your organization adopt green innovation?**	Yes	No	Maybe		
7	**Do you believe green innovation is important for a manufacturing organization?**	Yes	No	Maybe		

Section 2

Please indicate the level of agreement with each of the following statements in relation to their impact on employee retention.

	Statement	**Strongly Disagree**	**Disagree**	**Average**	**Agree**	**Strongly Agree**
	Green innovation					
8	My organization adopts green product innovation.					

9	My organization adopts green process innovation.					
	Organizational performance					
10	Organizational performance can be determined through financial performance					
11	Organizational performance can be determined through competitive advantage					
12	Organizational performance can be determined through environmental performance					
13	Organizational performance can be determined through operational performance					
14	Organizational performance can be determined through talent development					
15	Organizational performance can be determined through organizational culture					

Section 2

Please indicate the level of agreement with each of the following statements in relation to their impact on employee retention.

	Statement	**Strongly Disagree**	**Disagree**	**Average**	**Agree**	**Strongly Agree**
	Green innovation					
8	My organization adopts green product innovation.					
9	My organization adopts green process innovation.					
	Organizational performance					
10	Organizational performance can be determined through financial performance					
11	Organizational performance can be determined through competitive advantage					
12	Organizational performance can be determined through environmental performance					
13	Organizational performance can be determined through operational performance					
14	Organizational performance can be determined through talent development					
15	Organizational performance can be determined through organizational culture					