

# Customer Influence on Innovation in the Tea Subsector in Kenya

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**Abstract:** Innovation has been identified as one of the key vehicles of organizations' competitiveness. Many organizations have been forced by difficult business environment to consider at least an aspect of innovation in their processes in order to stay afloat. Tea is one of the major foreign exchange earners and the Tea subsector supports 10 % of the Kenyan population. Tea is a scheduled cash crop in Kenya that is a source of livelihood to many. Innovation in the tea industry in the form of mechanical tea harvesting technology has been introduced as a comparatively cheaper option to mitigate the high labour cost that is threatening the viability of the subsector. The confounding thing however is that the uptake of this technology is still low. This study therefore sought to uncover the contradiction by establishing if perceived customer stakeholder pressure influence innovation, specifically, the adoption of mechanical tea harvesting technology. The study employed diagnostic survey research design as the most appropriate since the research was about relationship between variables. The target population was all tea plantation firms in Kenya with the respondents being the managers in charge of the business units. A census enquiry was used and data collected using a semi-structured questionnaire. The response rate was 71%. A descriptive and inferential statistics data analysis was used with a logit model indicating a beta coefficient of 2.034 with a p value of 0.003 meaning that perceived customer pressure was positively significant. Nagelkerke R square was 0.465 also indicating that it was a fairly good predictive model. The findings suggest that customers are an important stakeholder group in firm's innovation decisions in the tea subsector in Kenya.

**Keywords:** Innovation, perceived customer pressure, Technology, Adoption, Mechanical tea harvesting.

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## 1. INTRODUCTION

### 1.1 Background of the study

Change is inevitable if businesses have to remain competitive. Organizations require novel ideas on product or services they offer. Johannessen (2009) argued that adoption of innovation may lead to improved operational efficiency, creation of better working practices, competitive advantage and flexibility that ensures sustainable development of companies in a dynamic changing business environment. Macgregor and Fontrodana (2008) argue that since customers and society have become extremely sensitive to the perceived ethical behaviour of organizations, companies must, in order to be to be successful and innovative today, consider the social and environmental impact of their operational processes, stimulate employees to be creative, and collaborate with their customers, suppliers and other business partners in designing and developing new products and services.

The business environment comprises of several players whose interests are often conflicting. These players include customers, employees, customers, community and also the government. Schiavone (2012) opines that new changes in an organization have to be filtered in these groups through discourse and negotiations. If the change does not fit into interests and values of the group, adoption is likely not to be feasible. Decisions, especially those that bring radical changes in the way business is run therefore need to incorporate the views of those who stand to be affected by the decisions if successful implementation of change has to occur. Customers form one of the players. Their needs and expectations are also essential for process innovations. According to McAdam, Hazlett and Casey (2005), discovering the needs of customers therefore is of essence to private enterprises. Orientation of a firm to both existing and potential customers and

their satisfaction is very critical. The companies oriented to customers are responsive to final customer needs, measure their satisfaction level and improve the processes in order to satisfy customers (Slater & Narver, 1998)

### **1.2 Statement of the problem**

The tea subsector is one of the main drivers of the economic growth in Kenya. It contributes to about 2.5 percent of GDP in Kenya (RoK, 2018). Tea is also the leading foreign exchange earner in Kenya. The greatest challenge in the tea subsector however is the high labour cost which constitutes about 55 percent of total cost of production out of which 75 percent relates to the manual harvesting of the crop (van de Wal, 2008). RoK (2015) shows that Kenyan tea prices declined by 23% between 2011 and 2014. The high labour cost coupled with declining tea prices as observed by Ongong'a and Ochieng (2013) depicts declining profitability trend and spells doom to the livelihoods that depend on the subsector. The tea subsector however, has in the recent past identified innovation as an intervention of taming the declining profitability. This is through adoption of mechanical tea harvesting technology (van de Wal, 2008). The technology which is largely a process innovation is relatively labour efficient. A comparative analysis shows that mechanical tea harvesting technology is approximately 50 percent cheaper compared to the alternative manual tea harvesting (Maina & Kaluli, 2013). The uptake of this technology however, is surprisingly low and stands at 32 percent of the total crop harvested in tea plantation segment (Misoi & Wario, 2014).

Extant literature shows that management decisions in organizations are actually a reflection of stakeholders' interest which at times conflict (Freeman, 2004). New changes in an organization have to be filtered in these groups through discourse and negotiations. If the change does not fit into interests and values of the group, adoption is likely not to be feasible (Schivavone, 2012). Furthermore, the decision to adopt a particular innovation may vary between stakeholders because individual stakeholders may disagree on the costs and benefits involved. One of the important stakeholder groups is customers of the organization and this study therefore sought to establish the influence of perceived customer pressure in innovation in Kenya's tea subsector in the context of adoption of mechanical tea harvesting technology.

### **1.3 Research Objective**

To establish how perceived customer pressure influences innovation in the tea subsector in Kenya

### **1.4 Research Hypothesis**

H<sub>0</sub>: Perceived customer pressure do not influence innovation in the tea subsector in Kenya.

## **2. LITERATURE REVIEW**

### **2.1 Theoretical review**

The research was based on three overarching theories for the independent variable of perceived customer pressure i.e. the attribution theory that was used to explain management perception, stakeholder theory used to identify customers as a stakeholder group and resource dependence theory which was used to explain the source of customer pressure.

#### **2.1.1 Attribution Theory**

The attribution theory is the basis of perception and explains that people interpret behaviour in terms of its causes and that these interpretations play an important role in determining reactions to the behaviour. It further points out that antecedents of attributions are prior information, the individual set of beliefs and motivation (Kelley & Michela, 1980). The attribution is affected by information about the consequences of the action as these are compared with the consequences of other actions. Secondly, the attribution is affected by the perceiver's beliefs about what others would do in the same situation. Thirdly, attribution has to do with motivation. If the action affects the perceiver's welfare, there is a greater likelihood a disposition will be inferred from it. This occurs because the impact on the perceiver's welfare becomes a focal effect to which the other effects are assimilated. The perceiver's motivation is believed to affect the processing of information about action. Child (1972) suggests that perceptions are responsible for the choices which managers make in fitting the organization and its environment. Following Child's argument, it can be deduced that the way management perceive stakeholder pressure of customers therefore can determine the choices of management with regard to innovation.

#### **2.1.2 Stakeholder Theory**

Stakeholder theory can be understood to be a model that seeks to describe what a corporation is, a framework for examining linkages between practice of stakeholder management practice and performance and stakeholders as persons or

groups with legitimate interests which are of intricate value (Donaldson & Preston, 1995). Stakeholder theory therefore views a corporation as an organizational entity through which numerous and diverse participants accomplish multiple and not entirely congruent purposes. Since the conflicting interests have to be managed, it follows therefore that the key attribute of stakeholder management as envisaged in stakeholder theory is the attention to legitimate interests of appropriate stakeholders in decision making.

The study seeks to borrow from Freeman (1984) generic stakeholder groups model and as applied by Agle *et al.* (1999) i.e. shareholders, employees, customers, community and government bodies as groups who have interests in the firm and that the interests may conflict in the process of adoption of technology in the tea subsector in Kenya thus affecting the uptake of the technology. The basis of stakeholder group identification and prioritization is the stakeholder core attributes of power, urgency and legitimacy as posited by Mitchel, Agle and Wood (1997). Mitchel *et al.* (1997) defines power as the stakeholder's ability to influence the firm's behaviour whether or not it has a legitimate claim, whereas legitimacy of a claim on a firm is based upon contract, exchange, legal title, legal right, moral right, at risk status or moral interest in the harms and benefits generated by company actions. The attribute of urgency on the other hand is the degree to which a stakeholder's claim calls for immediate action.

### **2.1.3 Resource Dependency Theory**

Pfeffer and Salancik (1978) developed resource dependence theory which is based on the notion that environments are the source of scarce resources and organizations are dependent on these finite resources for survival. Pfeffer and Salancik argued that organizations are coalitions of varying interests and are "other directed" or controlled by those who control critical resources. The domination of a visual field therefore will likely be associated with critical resources. This is because power accrues to a group or coalition with access to such resources. Gaining approval or implementing successful change is largely dependent on who has the control of resources.

Whereas the stakeholder theory therefore seeks to answer the question of who are the stakeholders and what are their demands, Frooman (1999) merged the stakeholder theory and resource dependency theory in order to respond to a pertinent issue of how the stakeholders will go about getting these demands. The application of resource dependence theory by Frooman was based on the proposition that the types of influence strategies that stakeholders apply can be understood in terms of resources and that a determinant of the choice of strategies will be the type of resource relationship the firm and stakeholder have and where the balance of power lies within that relationship.

This study relied on Frooman (1999) argument in establishing the link between stakeholder pressures on innovation decision. The pressure of stakeholders will depend on resources they control and that resource dimension of a relationship is critical because power stems from it. Managers throughout the organization are expected to understand that their success is tied to customer demand. Managers' careers thrive when customer demand expands. Thus customers are therefore the ultimate resource on which companies depend. Although this seems obvious in terms of revenue, it is actually organizational incentives that make management see customers as a resource. The view of customers as a resource that organization depends upon therefore instigated the research hypothesis.

### **2.1.4 Independent variable of perceived customer pressure**

Due to fierce competition in the marketplace, globalization and an explosion of technology in recent years, businesses need to place customer orientation at the heart of the firm's competitiveness (Deshpande, Farley & Webster, 1993). According to McAdam *et al.* (2005), discovering the needs of customers therefore is of essence to private enterprises. Orientation of a firm to both existing and potential customers and their satisfaction is very critical. Verbeke and Tung (2012) however argue that a firm focused on current revenue stream is likely to be more customer salient than one that is targeting a potential revenue stream. Pirsch, Gupta and Grau (2007) opine that customers consciously and actively search for goods that provide them with the rewards or experiences they seek. They reward firms that fulfill their needs with loyalty, purchase intent, positive attitude and also demonstrate minimized skepticism if they feel that a firm has considered a number of moral and ethical consequences of its actions. The companies oriented to customers are therefore responsive to final customer needs, measure their satisfaction level and improve the processes in order to satisfy customers (Slater & Narver, 1998)

A critical view of importance of meeting customer demands however has been put forward despite the so obvious fact that firms would benefit from doing their best to serve their customers since customers are necessary to sustain the company's current business. Hamel and Prahalad (1991) as cited in Govindarajan, Kopalle and Danneels (2011) used the phrase "the

tyranny of the served market” to refer to the harmful effect of eagerness to serve current customers. Same sentiments were echoed by Slater and Narver (1998). The criticism of customer orientation has been targeted at its alleged effect on innovation in that getting close to customers detracts from true innovativeness and limits organizations ability to incrementally develop new products. Day (1999) pointed out that the concern about becoming more market-driven arises from the fear that undue attention may be given to current markets resulting in failure to notice the emerging markets. The work conducted by Christensen and colleagues (Christensen, 1997; Christensen and Bower, 1996) has been very influential in this thinking. They found that firms only pursued new technologies that addressed the needs of their current customers.

Salomo et al. (2003) provide strong evidence that customer orientation in innovation projects has a positive influence on new product development success. Zerenler (2008) on the same study on Turkish auto-industry established that customer capital was the greatest in influencing innovation performance. Han et al. (1998) show that customer orientation, coupled with competition and inter functional coordination, impact on innovation. Govindarajan, Kopalle and Danneels (2011) also established that mainstream customer orientation has a positive impact on the introduction of radical innovations but a negative impact on disruptive innovation, while emerging customer orientation has a positive effect on disruptive innovation and is unrelated to radical innovations. A survey of the largest Canadian firms showed that customer pressure was the second most cited source of pressure to adopt an environmental management plan after government pressure (Henriques & Sadorsky, 1996).

### **2.1.5 Dependent variable of Innovation**

Crossan and Apaydin (2010) provide a comprehensive definition of innovation as the production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres. They further view innovation as the renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. OECD (2005) defines innovation as the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. In both cases innovation is viewed as a process and an outcome.

Empirical studies demonstrate that innovative firms show higher profits, higher market value, better credit ratings, higher market share, and higher probabilities of survival in the market (Foss, Laursen & Pedersen, 2011). The ultimate reason for innovation in an organization therefore is to make profit. The contribution of new technology to economic growth can only be realized when and if the new technology is widely diffused and used. Diffusion itself results from a series of individual decisions to begin using the new technology, decisions which are often the result of a comparison of the uncertain benefits of the new invention with the uncertain costs of adopting. Rodgers (2003) argued that all firms or individuals who get exposed to technology must make a decision about whether to adopt or reject. This can be one instantaneously or through a process. Adoption of technology can therefore be seen as the cumulative or aggregate result of a series of individual calculations that weigh the incremental benefits of adopting a new technology.

The study looked at process innovation in the tea subsector in Kenya in the context of adoption of mechanical tea harvesting technology. Harvesting of tea involves the removal of the tender, growing shoots from the surface of the tea bush. For the purpose of capturing the dependent variable of innovation, this study built on the construct for measuring process innovation on the basis of criterion which was conceptualized and used in previous empirical studies of innovation such as Zerenner (2008) and Gammal, Salah and Elrayyes (2011) that used sales volume of the new product. This however had a slight modification to suit the tea industry and nature of innovation as captured by Misoi *et al.* (2015). To aid in the analysis, the variable of innovation was collapsed into a binary variable of adoption and non adoption of mechanical tea harvesting technology following Freeman’s (2003) definition of innovation. The adopters of MTH (technology) were assigned a dummy variable of 1 whereas the non adopters were assigned a dummy variable of 0.

## **3. RESEARCH METHODOLOGY**

### **3.1 Research design**

The design applied in this study was diagnostic survey design. It is the most appropriate because it is concerned with associations or relationships between variables. It seeks to minimize bias, utilize largely a structured instrument and apply a preplanned design for data analysis. Also, the study sought to obtain information that describes existing phenomena by asking individuals questions about their perceptions as well as explaining the status of two or more variables at a given point.

### 3.2 Target population

Population refers to the entire group of people or things of interest that the researcher wishes to investigate (Kothari & Garg, 2014; Sekaran, 2010; Mugenda & Mugenda, 2003). The target population therefore was all plantation tea estates in Kenya because of their potential to adopt mechanical tea harvesting technology.

### 3.3 Census enquiry

Owing to the small nature of the population i.e. the 55 plantation estates, the study adopted the census enquiry approach following Kothari and Garg (2014) who suggested that if the target population is not so large, census survey may provide better results than sample surveys.

### 3.4 Data collection instruments

In this study, the primary research data was collected using questionnaires. The questionnaires consisted of structured and open ended questions. The questionnaires were hand delivered to the respondents, who read, understood and filled them appropriately. Once administered, the questionnaires were collected, checked for completeness and consistency and coded.

### 3.5 Operationalization of variable

Customer pressure was operationalized by measuring the extent to which the direct customers considered firm's practices in regard to the impact of technology on the product as used by Delmas and Toffel (2008) to measure coercive pressures from customers. The proxy for customer pressure in this study was the percentage of certified product of the mechanically harvested product. Management perception of customer pressure was measured using the stakeholder attributes of power, legitimacy and urgency as per Mitchel et al. (1997) and captured in a 5 point likert scale.

### 3.6 Data processing and analysis

Descriptive and inferential statistics was used for the quantitative variables. The statistical package for social sciences (SPSS) was employed in the analysis. The quantitative data was summarized using the descriptive statistics of means and the standard deviations and also through inferential statistics i.e. correlation and logistic regression analysis.

## 4. RESULTS AND DISCUSSION

### 4.1 Response Rate

Forty nine questionnaires were hand delivered to tea plantation estates across the Kenya tea industry. This excluded 6 estates which had been used to carry out the pilot study. 35 were successfully filled and returned giving a response rate of 71% as indicated in Table 4.1. This was deemed adequate for the study based on Neuman (2000) and Mugenda and Mugenda (2003) who opined that response rate of above 50% is adequate for a survey study. In fact, Mugenda and Mugenda suggested that 50% response rate is adequate, 60% is good and above 70% very good for a survey study.

### 4.2 Dependent Variable: Innovation

The adopters of the technology were assigned a dummy variable of 1 whereas the non-adopters were assigned a dummy variable of 0. The collapsing of the variable into groups of adopters and non-adopters easily lent itself to the use logistic regression model. As shown in Table 4.1, 14 plantation estates representing 40% had not embraced the MTH technology whereas 21 estates representing 60% had embraced. The transformed variable of innovation formed the basis of further analysis with the independent variables in which the logistic regression model was used.

**Table 4.1: Innovation (MTH technology Adoption)**

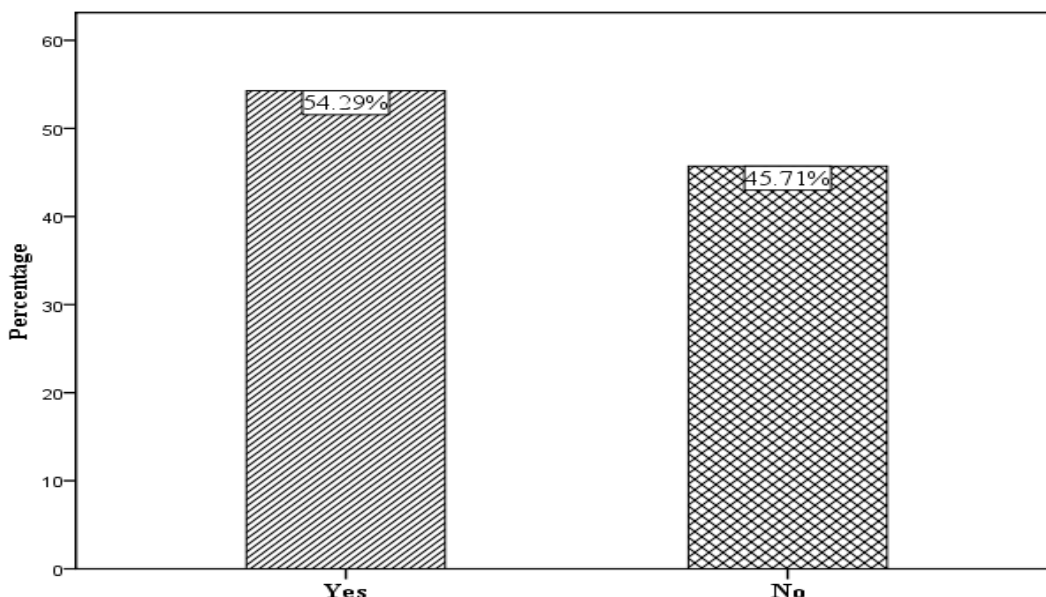
Innovation	Frequency	Valid Percent
Non Adoption of MTH = 0	14	40.0
Adoption of MTH = 1	21	60.0
Total	35	100.0

### 4.3 Independent Variable: Perceived Customer pressure

#### Qualitative analysis

The study sought to establish the effect of perceived customer pressure on firm’s decision to pursue MTH technology innovation or not. Qualitative analysis was carried out on the question put the respondents on their opinion of whether customer pressure influenced the decision of the firms choice of adopting the MTH technology. The respondents were required to answer yes or no and provide reasons of their answers. 54.29 % answered yes whereas 45.71% answered no as indicated in Figure 4.1. The respondents who answered in the affirmative argued that customer’s view was very important in that it could influence future consumption of the product. The respondents observed that this could arise if the technology could give rise to the following; if it can affect the future pricing of the product; if the process innovation could result in an inferior product; if the new operation could alter the product specifications; if the operation has an impact on safety and environment.

Customer pressure was deemed not to influence the decision to pursue MTH technology in situations where there was customer ignorance. The respondents who did not consider customers as exerting any pressure also pointed out that the business of tea was driven more by sustainability, safety and quality issues and not by method of harvesting.



**Figure 4.1: Respondent’s opinion on customer influence on innovation**

#### Quantitative Analysis

##### Management Perception of Customer Pressure on Innovation

Respondents were asked to rate in a 5 point likert scale how they perceived customer pressure based on six questions on customer-innovation related issues. These results are shown in Table 4.2. Ratings below 3 were deemed to represent low customer pressure whereas rating above 3 was deemed to show high customer pressure.

The extent at which customer’s views were taken on board with respect to innovation decisions had a mean rating of 3.83 with majority of respondents i.e.57.1% scoring an moderate to a high extent for the question. The implication of this is that in management opinion, customers say was considered as far as matters innovation was concerned. This observation is in line with McAdam et al. (2005) who posited that discovering the needs of customers is of essence to private enterprises. The Needs of customers can only be discovered through engaging with them.

The frequency of which customers were informed of operational changes had a mean rating of 3.17 which is greater than 3.0. 74.3% of the respondents indicated somewhat to a high extent on this question. This indicates that the management perceived as important the need to keep customers aware of changes happening in the organization. The findings are in consonance with Govindarajan, Kopalle and Danneels (2011) who also emphasized that customer orientation has an

impact on the introduction of innovations. 74.3% of the respondents scored “moderately” to “a high extent” that customer’s views were considered in development of new products. The mean rating for this question was 4.03. The management perception in this study vindicates the earlier findings of Christensen (1997) and Christensen and Bower (1996) that firms pursued new technologies that addressed the needs of their current customers.

A low rating of 2.9 was noted in the question regarding customer entering into joint alliances with the firm with regards innovations. The findings indicated that in management opinion, customers do not enter into direct alliances for developing new technologies. A combined 54.3% of respondents felt that the firms pursue product improvement processes. The rating for the question was a high of 3.60. High quality focus means the need to attract and keep customers. The findings corroborate Slater & Narver (1998) who posited that companies oriented to customers improve their processes in order to satisfy customers. The findings tend also to agree with the view of Pirsch, Gupta and Grau (2007) who opined that customers will reward firms that fulfill their needs and will actively search for goods that provide them with the rewards or experiences they seek. The respondents’ opinion on the sensitivity of the customers to changes in operational processes reflected a rating of 3.23 with 42.9% of them scoring “moderately” to a “high extent” for the question. The import of the finding is that customers were quite interested in what operational changes can affect their product. The sensitivity of customers has been shown to have an effect on innovation as put forth by Slater & Narver (1998) who argued that customer orientation is alleged to have an effect on innovation in that getting close to customers detracts from true innovativeness and limits organizations ability to incrementally develop new products.

**Table 4.2: Perceived customer pressure descriptive statistics**

	Not at all	Slightly	Somewhat	Moderately	To a great extent	Mean
To what extent are customers’ views taken on board in the innovation decisions of the organization?	0.0%	11.4%	31.4%	20.0%	37.1%	3.83
How frequent are customers kept informed on the operational developments in the company?	2.9%	28.6%	34.3%	28.6%	8.6%	3.17
To what extent are customers' views considered in the developing of new products or processes?	0.0%	2.9%	22.9%	42.9%	31.3%	4.03
To what extent are there joint technology and research alliances with the customers?	20.0%	20.0%	17.2%	31.4%	11.4%	2.94
To what extent does the company's new processes target improved product quality?	5.7%	14.3%	25.7%	22.9%	31.4%	3.60
How sensitive are customers to changes in operational processes?	5.7%	28.5%	22.9%	22.9%	20.0%	3.23

The overall rating for perceived customer pressure was 3.47 as indicated in Table 4.3 which was slightly over the midpoint of 3.0. This indicates a fairly high than average level of perceived customer pressure in the tea subsector.

**Table 4.3: Descriptive statistics summary for perceived customer pressure**

Variable	N	Mean	Std. Deviation
Perceived Customer Pressure	35	3.47	0.854

### Statistical Modeling

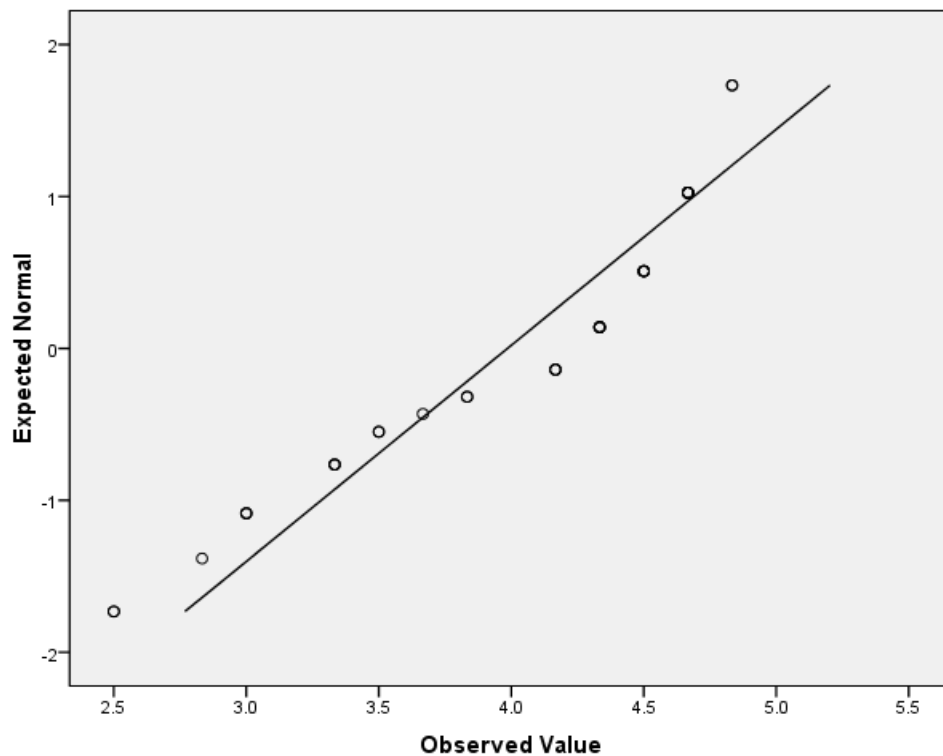
#### Normality Test

In order to choose the appropriate model for analysis of data, normality test was carried out. Shapiro-Wilk normality test was chosen for its appropriateness for small sized samples. The results in Table 4.4 indicate a Shapiro –Wilk normality statistic of 0.928 with a significance of 0.024 less than to 0.05. This indicates the non-normality of data.

**Table 4.4: Perceived customer pressure normality test**

	Shapiro-Wilk		
	Statistic	df	Sig.
Customer Pressure	0.928	35	0.024

The Q-Q plot was also done to confirm the normality graphically. The figure 4.2 clearly demonstrates that non linearity of the plot thus further showing the non-normality. Though the data was found not to be normally distributed, this did not pose any analytical integrity issues since the response variable of innovation in which the relationship with perceived customers pressure was to be related was dichotomous variable hence lending itself for a logistical regression model. One of the model's conditions is that of non-normality assumption, thus making the non-normality of the data a non-issue.



**Figure 4.2: Normal Q-Q plot for customer pressure**

**Innovation and perceived customer pressure correlation**

The variable of perceived customer pressure was then correlated with innovation using pearson correlation in order to investigate the existence of association with the innovation. The outcome shown in Table 4.5 indicated that there is a strong correlation between innovation in the tea subsector and customer pressure. The Pearson r correlation obtained was 0.603 with a p value of 0.000 which was significant at 5% level of significance.

**Table 4.5: Innovation and perceived customer pressure correlation**

		Innovation	Perceived Customer Pressure
Innovation	Pearson Correlation	1	0.603**
	Sig. (2-tailed)		0.000
	N	35	35
Perceived Customer Pressure	Pearson Correlation	0.603**	1
	Sig. (2-tailed)	0.000	
	N	35	35

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



A further measure of association was done by comparing the means of perceived customer pressure ratings of the two categories in the innovation variable i.e. the firms that had not adopted the MTH technology against those that had adopted. The mean rating for perceived customer pressure indicated in Table 4.6 of 2.845 and 3.881 were compared using T test with the null hypothesis in question being; the means from the two categories of adopters and non-adopters of MTH technology are equal.

**Table 4.6: Perceived customer pressure group statistics by category**

Innovation	N	Mean	Std. Deviation	Std. Error Mean
Non Adopters of MTH = 0	14	2.845	0.405	0.108
Adopters of MTH = 1	21	3.881	0.827	0.180

The output of the T test in Table 4.7 indicate a t of -4.337 with a p value of 0.000 which is less than the alpha of 0.05. This means that the hypothesis that the two means are equal is rejected. There is therefore a significant relationship between perceived customer pressure and innovation.

**Table 4.7: T test for equality of means of perceived customer pressure**

t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
-4.337	33	0.000	-1.036	0.239

### Logistic Regression Model

Having established the existence of association through the correlation and t test, a logistic regression was therefore done to ascertain the nature of the influence of perceived customer pressure on innovation in the context of mechanical tea harvesting technology and to further develop a predictive model for innovation in MTH technology adoption given a level of perceived customer pressure. The dependent variable of innovation was also treated as a binary variable of non-adopters and adopters of MTH technology whereby dummy variable of 0 and 1 was assigned respectively to aid in the analysis. The summary of the model as shown in Table 4.8 indicate a -2 log likelihood of 32.363 with a Nagelkerke R square of 0.465. This indicates that 46.5% of the variation in the predictor model is explained by the perceived customer pressure variable whereas the rest is as a result of other factors.

**Table 4.8: Model summary of perceived customer pressure and innovation**

-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
32.363	0.344	0.465

As a logistic model of the form;

$$\ln(P(Y=1 | X)/P(Y=0 | X)) = \text{logit}(Y) = Z = \beta X$$

and where  $Z = \beta X$  is the linear predictor the model can be substituted to be;

As a logistic model of the form;

$$\ln \frac{P(Y=1|X)}{P(Y=0|X)} = \text{logit}(Y) = Z = \beta X$$

Where;

$Z_{PCP}$  is natural log of the odds ratio,

$\beta_k$  is the constant,

$\beta_{PCP}$  is the predictor variable coefficient and  $X_{PCP}$  is perceived customer pressure rating.

The logistic regression outcome as shown in Table 4.9 therefore indicates a positive beta coefficient of 2.034 with p value of 0.003 which is less than the alpha of 0.05. This means that the perceived customer pressure is positively significantly at 5% level of significance. The implication of this result is that the null hypothesis that perceived customer pressure does not influence innovation is therefore rejected. The logistic regression analysis further provides the coefficient for fitting the predictor model.

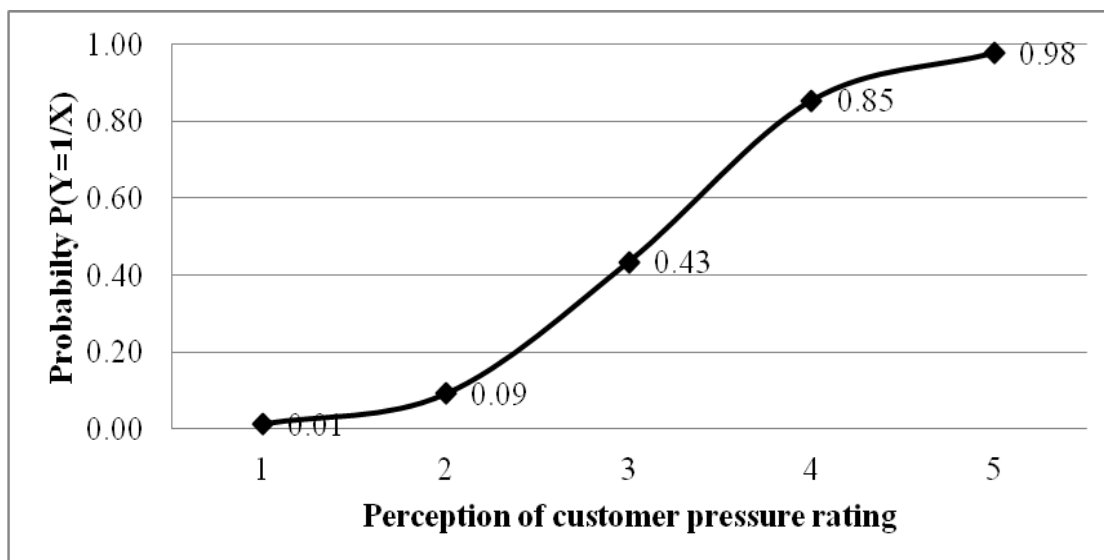
**Table 4.9: Logistic regression of perception of customers**

	B	S.E.	Wald	Df	Sig.	Exp(B)
Perception of customers	2.034	0.685	8.827	1	0.003	7.648
Constant	-6.364	2.233	8.123	1	0.004	0.002

This means that the perception of customers is positively significantly at 5% level of significance. The implication of this result is that the null hypothesis that perception of customers does not influence innovation is therefore rejected. The results correspond to Salomo *et al.* (2003) who established that customer orientation in innovation has a positive influence on new product development success. It is also in agreement with Govindarajan, Kopalle and Danneels (2011) who established that mainstream customer orientation has a positive impact on the introduction of radical innovations. The findings also match those of Santos-Vijande and Alvarez-Gonzalez (2007) who found out that a firm's strong focus on customers may lead to an emphasis on innovation derived from the desire to continuously adapt to customer needs.

**The fitted model of Perception of customers**

The logistic regression analysis further provides the coefficients for fitting the predictor model. The fitted model is therefore  $Z = -6.364 + 2.034X_{CPP}$ . A graphical fitting of the model was used to determine the probability of adoption of MTH technology given a specified level of perception of customers. For example, the estimated probability of a firm that has a low perception of customers rating of 1 adopting MTH technology is 0.01 whereas the estimated probability of a firm adopting MTH technology given a high perception of customers rating of 5 is 0.98 as depicted in Figure 4.3.



**Figure 4.3: Perception of customers and probabilities of adoption of MTH Technology**

The graph from the fitted model has a positive slope confirming the positive influence of perceived customer pressure on innovation. The findings therefore corroborate that of Salomo *et al.* (2003) who established that customer orientation in innovation projects has influence on new product development success. It also supports Zerenler (2008) who found out that that customer capital was the greatest in influencing innovation performance and also corroborate that of Govindarajan, Kopalle and Danneels (2011) also established that customer orientation has a positive impact on the introduction of radical innovations.

**5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

**5.1 Summary of the findings**

The study sought to establish the influence of perceived customer pressure on innovation in the tea subsector in Kenya. The outcome of the study indicates that there is a significant positive correlation between perceived customer pressure and innovation with Pearson r of 0.603 having a p value of 0.000. The p value is lower than the critical alpha of 0.05. The T test of equality of means indicates that there is a significant difference between the non-adopters and adopters of MTH technology innovation as far as perceived customer pressure. The obtained p value of 0.000 which is less than the critical

alpha of 0.05 indicates a significant difference between the two categories. This means that there exists an association between perceived customer pressure and innovation in the context of MTH technology in the tea subsector in Kenya. The results from logistic regression depict a positive significant relationship between perceived owners pressure and innovation. The model had a goodness of fit of 46.5% since the Nagelkerke R square was 0.465 with a positive beta coefficient of 2.034 and a p value of 0.003. The p value is lower than critical alpha of 0.05. From the fitted model, the estimated probability of a firm in the tea subsector adopting MTH technology innovation given a perceived customer pressure low rating of 1 is 0.013 whereas the estimated probability of a firm in the tea subsector adopting MTH technology innovation given a perceived customer pressure high rating of 5 is 0.978. The result therefore is that perceived customer pressure therefore positively influence innovation in the tea subsector in Kenya

## **5.2 Conclusion**

Perceived customer pressure indicated a strong positive influence on innovation of MTH technology. The findings were in consonance with earlier literature that indicated that customer views were held in high esteem by organizations pursuing innovation. The customers' views were very important in that they could influence future consumption of the product. Also such influence could arise if the technology could give rise to the following; if it can affect the future pricing of the product; if the process innovation could result in an inferior product; if the new operation could alter the product specifications; if the operation has an impact on safety and environment.

## **5.3 Recommendations**

The study affirmed the influence that customers have on organization's innovativeness. It is recommended therefore that an enhanced collaboration with customers by the tea subsector players will lead to greater levels of innovation. The final product should reflect the inputs on the processes by the customer shareholder group so that sustainability of business can be guaranteed.

## **5.4 Suggestions for further research**

The study sought to establish the influence of perceived stakeholder pressure on innovation in the tea subsector in Kenya with specific focus on customers. The study looked at perception of the stakeholder pressure from the lenses of managers on the production end of the supply chain. A study that can focus on perspectives from the customers themselves or other stakeholder groups could help to enrich the findings.

The study also limited itself to innovation in the context of process innovation and specifically mechanical tea harvesting technology yet innovation comes in various forms. Further research can therefore be pursued on how stakeholder pressure affects other forms of innovation in the tea subsector.

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