The Impact of Technology Level and Industry Knowledge on the Craftsmen's Involvement in Traditional Brassware Industry in Kandy Region

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INTRODUCTION

The Micro & Small scale industries represent more than 90% of the total number of enterprises operating in Sri Lanka (Central Bank of Sri Lanka, 2017) and they significantly contribute towards the economic growth of the country, generating 52% of the GDP and making up 60% of formal employment (Department of Census and Statistics , 2017). Out of this, the small scale handicraft businesses are traditional in nature and are depending on inherited entrepreneurial skills of craftsmen. The majority of these small scale businesses employ rudimentary production processes that have a low production volume and their sales are basically confined to local market. For example, only USD 2 Mn exports were recorded for brass-based handicraft products in 2016 (Export Development Board, 2017).

There was an early study on the cultural resilience and survivability of rural livelihoods in Kandyan region over five major craft villages (Daskon, 2010) in which the majority of respondents were elderly people in the age between 55 to 80 with a vast experience in the industry over 35 years. Accordingly, the Kandyan craftsmen seems to be engaged in these industries merely to their own survival even under adverse economic conditions in the country resulting in increasing input costs, labor issues, and challenging market conditions. The research revealed that they do not plan either the succession of the industry or how they should make changes to their products to match market requirements in order to successfully compete with the substituted products in the market.

According to National Craft Council (2018) the industry engagement of young craftsmen who are in the age category of 18-35 has been gradually decreased over the past 05 years. This situation has been a serious threat for the sustainability of the Kandyan handicraft sector in terms of lack of involvement by young craftsmen. The lack of direct involvement of the youngsters and shortfall of the successful young craftsmen in this category has directly resulted in very low-level contribution to the local industry.

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RESEARCH AIM

The traditional brassware industry seems lagging behind in updating its manufacturing process with latest technology. In general, young craftsmen may prefer to work with latest manufacturing processes with latest technology compared to traditional, slow and unsafe processes. Furthermore, both technical and theoretical knowledge on the industry may influence craftsmen to get involved in the industry with confidence. Hence this research aims to study the impact of level technology and the industry knowledge on the craftsmen's involvement in traditional brassware industry in Kandy region.

RESEARCH OBJECTIVES

1. To analyze the impact of level of technology on the craftsmen's involvement in traditional brassware industry in Kandy region.
2. To analyze the impact of craftsmen's industry knowledge on the craftsmen's involvement in traditional brassware industry in Kandy region.
3. To analyze the craftsmen's involvement in the brassware industry by their age

THEORY

Recent Technical Need Assessment carried out in the brassware industry in Sri Lanka revealed a wide gap between the required level and the current level of knowledge & technology applied in the industry (Chanjief, et al., 2015). This study found challenges in the industry knowledge of craftsmen such as unawareness of heat affected zones at the times of manual grinding and welding, unawareness of standardized conditions of reinforcements of molds and their cooling rates, lack of technical knowledge in mold preparations efficiency, identifying and accessing of quality raw materials and unavailability of training & awareness program on sustainable manufacturing processes etc. Another past research on studying the constraints that impacting the development of Sri Lankan traditional handicraft sector emphasize the need to adapt National Vocational Qualification standards in traditional handicraft manufacturing processes as the technology and the knowledge of the industry is not well structured or published which affect the knowledge transfer to next generation (University of Vocational Technology , 2010). This holds equally true with the brassware industry as there is no specific systematic way to learn the craft. Therefore, it may affect the level of involvement of the craftsmen in the industry.

Similarly, study conducted on the traditional brassware industry in Terengganu, Malaysia found that the industry is in a critical situation due to low interest of younger generation, lack of succession and limitation of new technology application (Mohamad et.al, 2013). Furthermore, in a recent study Ananda

(2017) categorized reasons for non-involvement of craftsmen in the traditional handicraft industry as Pushing and Pulling factors. One pushing factor has been identified as lengthy and harsh manufacturing process which is based on old technology. In relation to brassware industry, it could be observed a lack of modern technology based manufacturing processes which is a painstaking manufacturing process under harsh working environment forcing young craftsmen to look elsewhere. Among other Pushing factors identified are high raw material cost, lack of government support and social economic issues. Similarly Jayawickrama *et. al.,* (2016) argued the lack of competencies to adapt new technology is a threat to sustainability of the Sri Lankan brassware industry and found a significant productivity enhancement with adaptation of appropriate technology.

METHODS

This research took a deductive approach to collect data using a survey. Out of 584 recorded brassware manufacturers in the region a sample of 100 was selected based on 95% confidence level and 8% margin of error (National Craft Council, 2018). A questionnaire of 1-5 likert- scale was distributed to the sample of brassware manufacturers on convenient basis based on Pilimathalawa, Gadaladeniya, Kiriwawla, Embekka and Kiriwawla areas in kandy region. This was the most rational option considering difficulty in locating other brassware manufacturers. Questions were mainly researcher designed with a Cronbach's Alpha value of 6.93 for internal consistency.

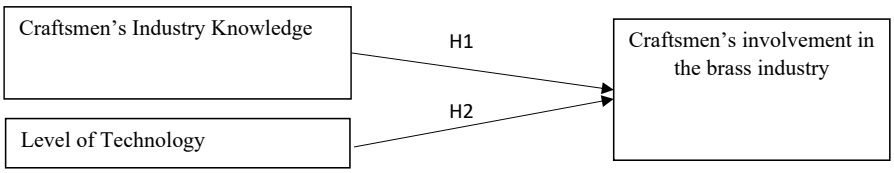


Figure 01: Conceptual Framework

Hypothesis

H1 – Craftsmen's industry knowledge has a significant relationship with the level of involvement in the brassware industry

H2 - Level of Technology has a significant relationship with the level of involvement in the brassware industry

RESULTS

Table 1: Analysis of age across the sample

Age Range	Frequency	Percent	Cumulative Percentage	Mean Value for Craftsmen's involvement
18-25	8	8%	8%	2.1250
26-35	17	17%	25%	2.1618
36-45	21	21%	46%	2.5952
46-55	33	33%	79%	3.1591
56-65	14	14%	93%	3.2679
Above 66	7	7%	100%	3.3214

Table 2: One-way ANOVA Table for Age and Craftsmen's Involvement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.651	5	4.130	24.376	.000
Within Groups	15.927	94	.169		
Total	36.578	99			

Table 3: Correlations between variables

		Industry Knowledge	Level of Technology	Craftsmen's Involvement
Industry Knowledge	Pearson Correlation	1	.408**	.354**
	Sig. (2-tailed)		.000	.000
	N	100	100	100
Level of Technology	Pearson Correlation	.408**	1	.870**
	Sig. (2-tailed)	.000		.000
	N	100	100	100
Craftsmen's Involvement	Pearson Correlation	.354**	.870**	1
	Sig. (2-tailed)	.000	.000	
	N	100	100	100

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

Table 04: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.870[a]	.756	.751	.303	2.163

a. Predictors: (Constant), Industry Knowledge, Level of Technology

b. Dependent Variable: Craftsmen's Involvement

Table 5: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.667	2	13.833	150.587	.000[b]
	Residual	8.911	97	.092		
	Total	36.578	99			

a. Dependent Variable: Craftsmen's Involvement

b. Predictors: (Constant), Industry Knowledge, Level of Technology

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.855	.164		5.207	.000
	Level of Technology	.696	.044	.870	15.851	.000
	Industry Knowledge	.000	.061	.000	-.008	.994

a. Dependent Variable: Craftsmen's Involvement

DISCUSSION

As per the table 01 the majority of sample comprises of craftsmen in the age between 46-55. More than 50% of the sample is above 46 years of age. Out of the sample surveyed the involvement of the craftsmen in the age category 18 - 35 years is only 25%. This is closely in line with Daskon's findings which reveals that the involvement of the young generation in the industry is continue to decline (Daskon, 2010). Furthermore the One-way ANOVA for age and the craftsmen's involvement in the industry indicates a significant difference in the level of involvement across the age categories. The lowest Mean value for level of involvement has been recorded by the 18 – 25 age groups which indicate their lower involvement in the industry. The highest mean value has been recorded by the 66+ age group which indicates their higher level of involvement in the brassware industry. Similar to Daskon (2010) and Mohamad *et.al.,* (2013) respondents in the young age groups are relatively less likely to be involved in the brassware industry than their older colleagues.

Table 03 correlation analysis indicates both Craftsmen's Industry Knowledge and Level of Technology to have significant relationship with the level of involvement in the brassware industry in Kandy. Therefore, both H1 and H2 are accepted. Further multiple regression analysis indicates that these two variables to have a 75.6% predictability of the dependent variable. However only the level of technology has a significant impact on the dependent variable with a B coefficient of 69.6%. This study is in line with Ananda (2017) which identified the use of old technology in the manufacturing process to be a Pushing factor for non-involvement of craftsmen in the traditional handicraft industry. Earlier,

Chanjief, et al. (2015) also identified the gap in the current level of technology in local traditional handicraft industries and this study finding reveals that this impacts the level of craftsmen's involvement in the brassware industry.

IMPLICATIONS

The research looked at the craftsmen's involvement in the brassware industry in Kandy region and found the level of knowledge and the technology application to have significant relationship with the level of involvement. However only the level of technology indicated a significant impact over the predictability of craftsmen's involvement in the brassware industry. It also found a significant difference in the level of craftsmen's involvement across different age groups. The results are important especially for policy makers to develop the industry to improve young craftsmen's involvement. However, there is still questions as to how factors like government policy, home demand and supporting industry could influence the level of involvement in this industry which should be researched further. Considering the sampling design, the generalization of the results should be done with caution. Also the instrument used to collect data need further improvements in order to increase its reliability.

KEY WORDS

Brassware, Involvement, Technology gap

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