A STUDY ON THE PROBLEMS OF MANUFACTURING OF KORAI MATS (PAI) IN TIRUNELVELI AND THOOTHUKUDI DISTRICTS

K. Archunan
Assistant Professor,
Department of Commerce,
Subbalakashmilakshmipathy College of Science,
Madurai, Tamil Nadu, India.

Dr. G. Gurusamy
Professor and Head,
Department of Commerce,
P M T College,
Melaneelathanallur,
Tamil Nadu, India

Dr. S. Raju
Professor,
Department of Commerce
Research Centre
M D T Hindu College, Pettai,
Tirunelveli, Tamil Nadu, India

Abstract

The objective of this research was to find out the problems of manufacturing and marketing of mats (PAI) in Tirunelveli and Thoothukudi Districts. To achieve the purpose of the study, a sample data was collected from 390 entrepreneurs of Korai Mats (PAI) in Tirunelveli and Thoothukudi Districts, as a sample by adopting the Snowball sampling technique. This work adopted the relevant research designs, namely a comprehensive research design (descriptive and explanatory). A well structured and pre-tested questionnaire was used to collect the information required for the study. The appropriate analyses were carried out with the help of popular statistical package SPSS 21 and AMOS 21. The results of the research exposed the authentic life of respondents in the districts. The study constructed the seven core factors of problems from twenty various problems of manufacturing the Korai Mats (PAI) and ranked the factors of problems based on its consistency. The study revealed that a significant difference occurred in the problems of manufacturing based on the socioeconomic status of the respondents except for genders, age and years of existence. The study proved that the respondents of the study faced the problems of marketing significantly. The study showed that there was no significant association of gender, age, literacy level, monthly income and years of existence with the problems of marketing the Korai Mats (PAI). The study confirmed the significant impact of the problems of entrepreneurs in the marketing of Korai Mats (PAI) on their quality of life. The study suggested that the state and central governments should give the shoulder to the Korai Mats (PAI) industry, so that it will grow by leaps and bounds.

Key Words: *Entrepreneurs; Korai Mats (PAI); Manufacturing; Marketing; Quality of Life; Snowball Sampling Technique*

Introduction

A small-scale industry is a project or firm created on a small budget or for a small group of people located at home or a place near to home. A small-scale industry produces its goods using small machines, less power, and hired labor. It is situated in a single location and manufacture products meant for a few people. The Korai Mats are made either by hand weaving or using power loom and it comes under the small-scale industry sector. Mat weaving is an important traditional handicraft of Tamilnadu which is famous for its Korai dry-grass mats. Mat weavers and entrepreneurs from here not only create intricate patterns and designs, but mats are multicolored and often represent the ornate Pallava of a traditional silk sari from Tamilnadu. Mats made with Korai/Sedge grass are extremely delicate and highly valued. Korai grass (Cyperus corymbose Rob) has found a plenty along the river banks and in wetlands in Tamilnadu especially in Tirunelveli and Thoothukudi districts which are famous for its excellent quality Korai Mats (PAI). Here the local reed is split into nearly hundred pieces and is

woven on a loom with a cotton warp. The Korai Mats (PAI) are of such good quality that one can be rolled and place into a small box. The weaving also takes enormous time and patience on the part of the weaver. Men and women of the districts, especially from the Lebbai Muslim community, weave these mats only in this area. The Korai Mats (PAI) weaving industry, which hitherto used synthetic dyes for colorings its internationally acclaimed rugs, is all set to use an eco-friendly colorant, extracted from a plant[10]. The traditional colors used are red, green and black and the weavers can reach up to the maximum 140 counts in the Korai Mats (PAI). The earlier design was consisted primarily of stripes at the two ends or stripes through the body (very similar to the Jamakkaalam). This study is focusing the problems in manufacturing and weaving of Korai Mats (PAI) in Tirunelveli and Thoothukudi Districts of Tamilnadu state.

Objective of the Study

The primary aim of this research is to analyze the problem in manufacturing Korai Mats (PAI) in Tirunelveli and Thoothukudi districts. To achieve the primary aim of the research, specific objectives was such as.

1. To examine the problems faced by the korai mat manufacturer and weavers.
2. To offer suitable solutions based on the findings.

Hypotheses

The Kaiser-Meyer-Olkin is the standard of sampling adequacy, which fluctuates between 0 and 1. The values nearer to 1 are good and the value of 0.5 is the suggested least amount. The Bartlett's Test of Sphericity is the test for the following null hypothesis (H_1) that the correlation matrix has an identity matrix. Taking above sentence into consideration, these tests provide the minimum standard to proceed to Factor Analysis.

H_1 : This signifies that, there is no statistically significant correlation amidst variables problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI).

Analysis the Problems of Manufacturing of Korai Mats (PAI)

Manufacturing is the value added production of merchandise for use or sale using labor and machines, tools, chemical and biological processing, or formulation. Manufacturing is an ever-changing industry, where entrepreneurs face new issues and concerns every stage. The process of Korai Mats (PAI) weaving is time-consuming and painstaking. Entrepreneurs of Korai Mats (PAI) are facing numerous problems in the manufacturing of Korai Mats (PAI)from the lengthy processes of drying, soaking, splitting and dyeing the grass till the final procedure of drying the woven Korai Mats in the sun for a short time before being polished. The study sheds light on the problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI) in the study area. Initially, an attempt was made to factorize the various difficulties encountered by the entrepreneurs in the manufacturing of Korai Mats (PAI) for the convenience of further analysis in the study. Factor Analysis has been employed to identify the important factors problems faced by the entrepreneurs in the manufacturing of Korai Mats. This technique was considered appropriate as it requires no pre-existing of functional relationships and is a well known for

data reduction. It is used to reduce a large number of variables into a few numbers of core factors. The details of sampling adequacy and Sphericity of the collected data of the respondents has been shown in Table 4.1

Table 4.1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.568	
Bartlett's Test of Sphericity	Approx. Chi-Square	3042.148
	df	190
	Sig.	.000**

Source: Primary Data

**Significant at .05 level of confidence

In order to scrutinize the suitability of the factor analysis the Kaiser-Mayer Olkin (KMO) and Bartlett's Test measure of sampling adequacy were employed. The approximate of Chi-square is 3042.148 with 190 degrees of freedom, which is significant at 0.05 level of significance. Since, $p < \alpha$, the study, therefore, reject the null hypothesis (H_1) that there was a statistically significant interrelationship between variables problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI), χ^2 (190) = 3042.148, $p < .05$. The KMO statistic of 0.568 is also large (greater than 0.50). Hence, Factor Analysis has been considered as an appropriate technique for further analysis of the data.

The purpose of this investigation was to explore the factor structure underlying the data set of problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI). The factor analysis main aim is to lessen a bigger set of variable to a smaller set of factor; less in number than the original variable set, but capable of accounting for a big portion of the total variability in the items. The maximum likelihood estimation procedure was used to extract the factors from the variable data. Principal Component analysis was employed primarily for extracting factors which have Eigenvalues greater than one as per the Kaiser's rule. Using the rule, seven factors have been drawn and they have been shown in Table 4.2.

Table 4.2 Principal Component Analysis (PCA)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.101	20.504	20.504	4.101	20.504	20.504
2	2.614	13.068	33.573	2.614	13.068	33.573
3	1.986	9.931	43.503	1.986	9.931	43.503
4	1.722	8.608	52.111	1.722	8.608	52.111
5	1.230	6.151	58.262	1.230	6.151	58.262
6	1.159	5.797	64.060	1.159	5.797	64.060
7	1.096	5.478	69.537	1.096	5.478	69.537
8	.953	4.767	74.304			
9	.784	3.918	78.222			
10	.732	3.659	81.881			
11	.674	3.371	85.252			
12	.554	2.769	88.021			
13	.482	2.409	90.430			

14	.462	2.310	92.740			
15	.429	2.143	94.883			
16	.341	1.705	96.588			
17	.232	1.159	97.746			
18	.183	.913	98.660			
19	.161	.803	99.463			
20	.107	.537	100.000			

Source: Primary Data

Extraction Method: Principal Component Analysis

The numbers of the variables employed in the Factor analysis components constitute its first. The Eigenvalues are the variances of the factors. The total column contains the Eigenvalue. Principal Component Analysis (PCA) revealed seven components that had Eigenvalue greater than one and which explained 20.504%, 13.068%, 9.931%, 8.608%, 6.151%, 5.797% and 5.478% of the total variance, respectively. The first factor always accounted for the most varied and hence has the highest Eigenvalues. The next factor accounted for as much of the leftover variance as it can, and the same continued till the last factor. The percentage of variance represents the percent of total variance accounted for each factor, and the cumulative percentage gives the percentage of the variance account by the present and the earlier factors. In the recent research, the first seven factors explain 69.537% of the variance. It is a pretty good extraction because it can economize on the number of choice factors (from 20 to 7 underlying factors); it lost 30.463 % of information content for the picking of variables. As such, seven components have been retained. A varimax orthogonal rotation was employed to aid inter-portability. BY Varimax Rotation with Kaiser Normalization, seven factors have been extracted. Each component has been constituted of all those variables that have factored loadings greater than 0.5. Twenty variables have been clubbed into seven factors. The seven factor picked for further study with component loadings of the rotated solution have been presented in Table 4.3

Table 4.3 Varimax Orthogonal Rotated Component Matrix

Variables	Component						
	1	2	3	4	5	6	7
Back Pain	**.817**	.032	.270	.055	-.112	.056	.106
Eye Irritation	**.752**	.257	-.016	-.030	-.037	-.030	.093
Numbness in Leg Muscles	**.649**	-.018	.169	-.144	.033	.131	-.311
Allergic due to the dust created by the Korai grass	**.629**	-.169	-.048	-.136	.135	.281	.253
Muscle Cramps	**.579**	.093	.488	.158	-.079	.176	.167
Lack of Skilled Weavers	.176	**.896**	-.135	.071	-.045	-.022	-.071
Lack of Skilled Artisans	.153	**.841**	-.087	-.037	-.129	-.040	-.143
Lack of Technicians for Preparing Natural Dyeing the Fibers	-.227	**.717**	.103	-.075	.190	.296	.078
Lack of Apt Training	.089	-.099	**.773**	.242	.108	-.127	-.053
Pitiable Knowledge about the Modernized Technique	.182	-.018	**.678**	-.404	-.052	-.029	-.107
No welfare scheme in the profession	.130	-.143	**.565**	-.082	-.437	.148	.352

Steep increase in the price of Kathai	.036	-.084	-.018	**.828**	-.001	-.031	.047
Fluctuating prices of cotton and silk threads	.337	-.261	-.016	**-.632**	.013	.163	.273
Sharp increase in the price of Sappan yields	.144	-.213	.246	**.583**	.453	.279	.004
Fluctuating in production of Korai mats (PAI) based on power outage	.087	-.114	.025	-.087	**.803**	.100	.148
Laborers refused to work on Korai mat weaving units due to several unscheduled power outages	-.273	.188	-.145	.146	**.614**	-.358	-.120
Inferiority Feelings of Young Generation to do this Work	.012	.279	-.073	.044	-.003	**.771**	-.041
Young Generation not willing to Help/involve in the Production	.373	-.138	.001	-.116	-.036	**.671**	.111
MGNREGS	.213	-.134	.053	-.135	.002	.130	**.841**
Beedi Rolling/ Work	-.117	.040	-.127	.304	.398	-.320	**.539**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							

Source: Primary data

The matrix presented above provides the interrelation of the variables with that of the chosen factors. Note that the analysis has sorted the twenty questions belongs to the problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI) into seven somewhat overlapping groups of items, as shown by the blocked-up articles in Table 4.4. These have been sorted so that the items that have the highest loading (not considering whether the correlation is positive or negative) in the factors. After the number of extracted factors had been decided upon, the factors have been interpreted by identifying which factors have been associated with the problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI). The seven factors have been named as per the available literature and their group characteristics. The name of the Factors and its constituency of variables have been mentioned in Table 4.4.

Table 4.4 Name of the Seven Core Factors

Factor	Problems	Factor Loading	Factor Name
1	Back Pain	.817	Health Problems
	Eye Irritation	.752	
	Numbness in Leg Muscles	.649	
	Allergic due to the dust created by the Korai grass	.629	
	Muscle Cramps	.579	
2	Lack of Skilled Weavers	.896	Labour Shortage
	Lack of Skilled Artisans	.841	
	Lack of Technicians for Preparing Natural Dyeing the Fibers	.717	
3	Lack of Apt Training	.773	Lack of Promotional Activities
	Pitiable Knowledge about the Modernized Technique	.678	
	No welfare scheme in the profession	.565	
4	Steep increase in the price of Kathai (six bundles of 18-inch diameter of Korai grass)	.828	Expenditure of Raw materials
	Fluctuating prices of cotton and silk threads	-.632	

	Sharp increase in the price of Sappan yields for Coloring of Korai	.583	
5	Fluctuating in production of Korai Mats (PAI) based on power outage	.803	Power Outage
	Laborers refused to work on Korai Mat weaving units due to several unscheduled power outages	.614	
6	Inferiority Feelings of Young Generation to do this Work	.771	Scarcity of Cohort
	Young Generation not willing to Help/involve in the Production	.671	
7	Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)	.841	Shifted over to other Works
	Beedi Rolling/ Work	.539	

Source: Primary Data

Five items loaded onto the first Factor. It is evident from Table 4.5 that these five items all related to the health problems in the manufacturing of Korai Mats (PAI) faced by the entrepreneurs. This factor has been loaded by the variables named, Back Pain, Eye Irritation, Numbness in Leg Muscles, Allergic due to the dust created by the Korai grass and Muscle Cramps. The loading of the variables first, second, third, fourth and fifth on the first Factor is 0.817, 0.752, 0.649, 0.629 and 0.579 respectively. This factor was labeled, 'Health Problems.' This first factor explained 20.504% of the difference, which means approximately 20.504% of the variance in any one of the original variable which is being captured by the extracted factors.

Three items loaded onto a second factor related to the problems due to lack of skilled workers in the manufacturing of Korai Mats (PAI) faced by the entrepreneurs. This related to lack of skilled weavers, lack of skilled artisans and lack of technicians for preparing natural dyeing the fibers. The loading of the variables first, second and third on the factor two is 0.896, 0.841 and 0.717 respectively. This factor was labeled, 'Labor Shortage'. This second factor explained 13.068% of the difference, which means approximately 13.068% of the variance in any one of the original variable which is being captured by the extracted factors.

Three items loaded onto the third Factor related to the problems due to lack of promotional activities for manufacturing of Korai Mats (PAI) faced by the entrepreneurs. This component has been loaded by the variables named, lack of apt training, pitiable knowledge about the modernized technique, no welfare scheme in the profession. The loading of the variables first, second and third on the third Factor is 0.773, 0.678 and 0.565 respectively. This factor was labeled, 'Lack of Promotional Activities'. This third factor explained 9.931% of the difference, which means approximately 9.931% of the variance in any one of the original variable which is being captured by the extracted factors.

Three items loaded onto the fourth Factor. These three items all related to the problems connected with raw materials for manufacturing of Korai Mats (PAI) faced by the entrepreneurs. This aspect related to the variables named, steep increase in the price of Kathai (six bundles of the 18-inch diameter of Korai grass), fluctuating prices of cotton and silk threads and the sharp increase in the price of Sappan yields for the coloring of Korai. The loading of the variables first, second and third on the fourth Factor is 0.828, 0.632 and 0.583 respectively. This factor was labeled, 'Expensive of Raw Materials'. This fourth factor explained 8.608% of

the difference, which means approximately 8.608% of the variance in any one of the original variable which is being captured by the extracted factors. Two items loaded onto a fifth factor related to the problems due to power cut faced by the entrepreneurs in the manufacturing of Korai Mats (PAI). This related to fluctuating in the production of Korai Mats (PAI) based on power outage and laborers refused to work at Korai mat weaving units due to several unscheduled power outages. The loading of the variables first and second on the fifth Factor is 0.803 and 0.614 respectively. This factor was labeled, 'Power Outage'. This fifth factor explained 6.151% of the variance, which means approximately 6.151% of the change in any one of the original variable which is being captured by the extracted factors. Two items loaded onto a sixth factor related to the problems due to lack of followers faced by the entrepreneurs in the manufacturing of Korai Mats (PAI). This related to inferiority feelings of the young generation to do this work and young generation not willing to help/involve in the production. The loading of the variables first and second on the fifth Factor is 0.771 and 0.671 respectively. This factor was labeled, 'Scarcity of the Cohort.' This fifth factor explained 5.797% of the variance, which means approximately 5.797% of the change in any one of the original variable which is being captured by the extracted factors.

Two items loaded onto a seventh factor related to the problems due to the other works faced by the entrepreneurs in the manufacturing of Korai Mats (PAI). This was related to shifting over to the work in the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and shifted over to the work in the Beedi Rolling/ Work. The loading of the variables first and second on the fifth Factor is 0.841 and 0.539 respectively. This factor has been labeled, 'Shifted over to other Works'. This fifth factor explained 5.478% of change, which means approximately 5.478% of the variance in any one of the original variable which is being captured by the extracted factors.

An attempt was made to know the consistency of problems faced by the entrepreneurs in the manufacturing of Korai Mats (PAI). To analyze the consistency of challenges encountered by the entrepreneurs in the manufacturing of Korai Mats (PAI), the coefficient of variation (C_V) has been measured by the standardized formula by using mean score and standard deviation. The set of data, wherein the coefficient of difference is big points out that it is less stable or less uniform. If a coefficient of variation is small it shows that it is more stable or more homogeneous. The high C_V value reflects inconsistency among the samples within the group. The lower value of the coefficient of variation indicates more consistency. Table 4.6 shows the mean score, standard deviation, and coefficient of variations and rank of problems based on the C_V.

Finding and Suggestions

In this context, the conclusions chapter focuses primarily on the findings, conclusions, and recommendations of the study. The summary of main findings and conclusion of the previous chapters and to offer some suggestions for solving the problems of manufacturing and marketing of Korai Mats (PAI) and for improving the quality of life of entrepreneurs of Korai Mats (PAI) in Tirunelveli and Thoothukudi Districts.

It is observed that the entrepreneurs of Korai Mats (PAI) in the study area faced the health problems, labor shortage, lack of promotional activities, expensive raw materials, power outage, scarcity of cohort and hence shifted to the other works in the manufacturing of Korai Mats (PAI) almost evenly irrespective of their age groups.

The study indicated that the entrepreneurs of Korai Mats (PAI) in the study area faced the health problems, labor shortage and lack of promotional activities in the manufacturing of Korai Mats (PAI) not even based on their literacy levels. Whereas they faced the problems of expensive raw materials, power outage, scarcity of cohort and shifted over to the other works in the manufacturing of Korai Mats (PAI) almost evenly irrespective of their literacy levels.

It has been found from the analysis that the entrepreneurs of Korai Mats (PAI) in the study area faced health problems, lack of promotional activities and expensive raw materials in the manufacturing of Korai Mats (PAI) not even based on their monthly income levels. Whereas they faced the problems of labor shortage, power outage, scarcity of cohort and shifted over to the other works in the manufacturing of Korai Mats (PAI) almost evenly irrespective of their monthly income levels. It is inferred that the entrepreneurs of Korai Mats (PAI) in the study area faced health problems, labor shortage, lack of promotional activities, expensive of raw materials, power outage, scarcity of cohort and shifted to other works in the manufacturing of Korai Mats (PAI) almost evenly irrespective of their years of existence in the profession.

It has been found that the fabrication of Korai Mats (PAI) has been significantly affected very strongly by the problems of lack of promotional activities in the profession, expensive raw materials, power outage and scarcity of the cohort. Whereas it was not significantly affected by the problems of health problems, labor shortage and shifted over to other works.

Suggestions

After investigating the findings, the following recommendations are made. Great attention was in offering some beneficial suggestions for managing the problems of manufacturing and marketing of Korai Mats (PAI) and enhancing better quality of life of entrepreneurs of Korai Mats (PAI).

Since the study proved that most of the entrepreneurs of Korai Mats (PAI) were males, it has been suggested that Commercial banks should encourage Korai Mats (PAI) women entrepreneurs to promote industrial undertakings requiring a huge investment. It has also been suggested that financial assistance provided to Korai Mats (PAI) women entrepreneurs should include concessional rates of interest. A Certain percentage of advances should be available for thse entrepreneurs. There should be need-based financial assistance rather than security-based financial one. The study reported that the majority of the respondents (81.8 percent) were Muslims from the backward community. Hence, it has been suggested that central and state government should conduct Korai mats (PAI) manufacturing entrepreneurial development programs for Scheduled Castes, Scheduled Tribes and other weaker sections of the society. It has also been suggested that Commercial Banks should provide financial assistance to such entrepreneurs after completion of their training. The study has interestingly reported that the majority of the respondents has completed elementary school level of education. It has been suggested that financial institutions should encourage primary school level educational

Korai Mats (PAI) manufacturing entrepreneurs to avail them of financial assistance. They should be informed about the financial help available. It has also been suggested that Government officials and office bearers of Associations should assist such individuals in availing of institutional monetary help.

References

Books

1. Allen Rubin and Earl R. Babbie (2009). *Essential Research Methods for Social Work*. New Delhi: Cengage Learning Publication, pp.148-149.
2. Babbie, E (2010). *The practice of social research* (12th ed.). Belmont, CA: Wadsworth.
3. Bryman and Bell (2007). *Business Research Methods*. 2nd ed. New York: Oxford University Press, 2007, 168.

Journals

1. Abhinav Sharma and Gupta (2015). Challenges and Opportunities in Micro, the Small and Medium Enterprise in India. *International Journal of Research in Applied Science & Engineering Technology (IJRASET)*, Volume 3, Issue IV, pp.74-85.
2. Akilandeeswari and Pitchai (2016). Pottery Industry and ITS Development of thorough marketing through information and communication Technologies (ICT). *An International Journal of Research*, Volume 4, Issue 4, pp.6-13.
3. Aruna (2015). A Study on Problems faced by Micro, Small and Medium Enterprises – A special reference to small Entrepreneurs in Visakhapatnam. *IOSR Journal of Business and Management (IOSR-JBM),* Volume 17, Issue 4, pp.43 – 49.

Web sites

1. http://www.apa.org/topics/socioeconomic-status/
2. http://www.businessdictionary.com/definition/manufacturing.html
3. http://www.investopedia.com/terms/e/entrepreneur.asp#ixzz4bpthDeIH
4. http://www.investopedia.com/terms/m/marketing.asp#ixzz4bpFnrjcJ
5. http://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/7351-brand-image