



Determinants of the leather technology adoption by artisan/SMEs in the leather footwear and leather goods manufacturing in Kenya

Dr. Douglas Onyancha
Dedan Kimathi University of Technology
Nyeri, Kenya



Introduction

- Leather is the one of the most widely traded commodity in the world and by 2010, it had an estimated value of US\$ 100 billion
- The global demand for leather and leather products will continue glowing into the foreseeable future.
- Despite the growing global market for leather products such as footwear, fine leather, handbags, and auto upholstery, African countries, including Kenya, remain marginal players



Introduction

- Leather is the one of the most widely traded commodity in the world and by 2010, it had an estimated value of US\$ 100 billion
- COMESA region well embowered with livestock and hence large source of raw material for leather industries
- The leather sector holds huge potential for job creation, wealth generation, poverty reduction and rural development in COMESA region.
- SMEs and Artisans dominate the leather value chain in the COMESA region
- SMEs struggle to grow and meet market demands
- There is a wide gap between the latest technology and what is currently being used in the region.



Introduction

Definition

Technology is Machinery and equipment developed from the application of scientific knowledge (Oxford English-dictionary).

It can also be defined as the application of scientific knowledge for practical purposes, especially in industry.

Technology adoption: refers to the decision-making process of an individual firm to utilize and implement a technology.

It can also mean a choice to acquire and implement a new innovation.



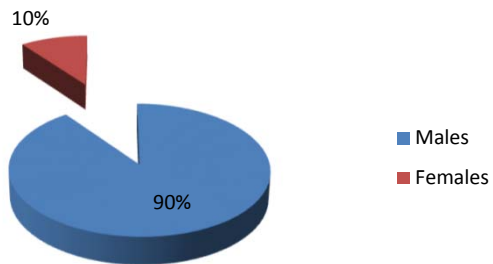
Methodology

- Field surveys and visits to SMES
- Interviews and questionnaires
- Secondary data sources

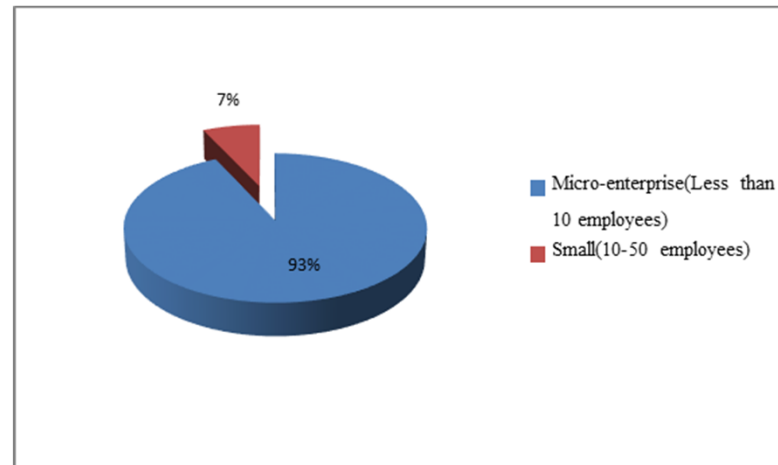


Results and Discussions

- Characteristics of the firms



Gender distribution



Size distribution



Results and Discussions

- Characteristics of the firms

Level of education	% involved	
KCSE	32%	
KCPE	52%	
On job training only	5%	
Short Courses	6%	
Others	5%	

Education background



Results and Discussions

- Characteristics of the firms

Ownership	Frequency	Percentage
Sole proprietorship	77	95
Limited Company	2	3
Cooperatives	1	1
Others	1	1
Total	81	100

Ownership



Results and Discussions

- Characteristics of the firms

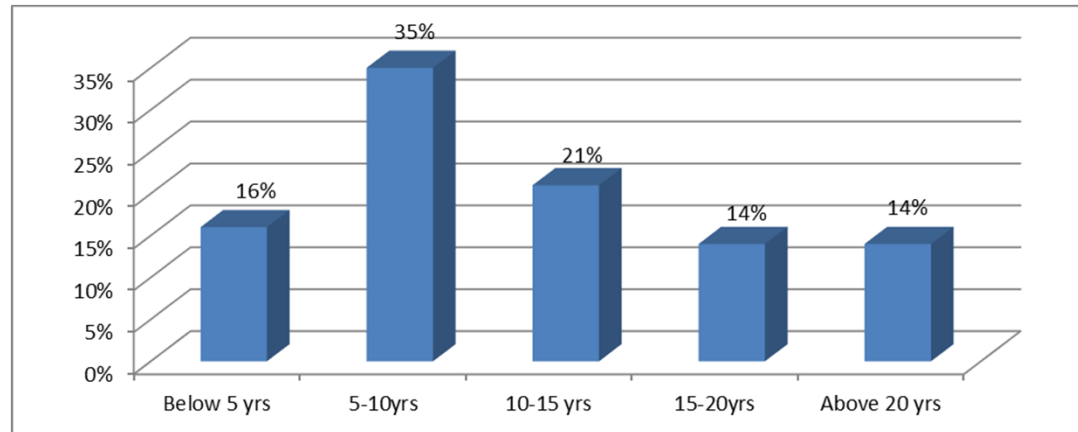
Sector	Frequency	Percentage
Leather Footwear only	34	42
Other Leather Goods only	19	23
Leather Footwear and other Leather Goods	28	35
Total	81	100

Products share



Results and Discussions

- Characteristics of the firms



No of years of operation



Results and Discussions

- Methods of Marketing

S/No.	METHOD	TOTAL NO. OF RESPONDENT FIRMS	FREQUENCY OF SUCH METHOD	%
1.	Social media	81	77	95
1.	Shop Display	81	81	100
1.	Sale persons	81	11	14
1.	Firms websites	81	5	6
1.	Show exhibition	81	19	23
1.	Innovation and exhibition weeks	81	17	21
1.	Taking samples to market/ customers	81	6	7



Results and Discussions

- Analysis of input before use

S/No.	SUBJECTED	TOTAL NO. OF RESPONDENT FIRMS	FREQUENCY OF SUBJECTION	%
1.	Yes	81	5	6
2.	No	81	76	94



Results and Discussions

- Characteristics of the firms

Certificate	Frequency	Percentage
Have ISO certificate only	0	0
Have KEBs certificate only	5	6
Have both ISO and KEBs certificates	0	0
Have no certificate at all	76	94
Total	81	100

Standards and certification



Results and Discussions

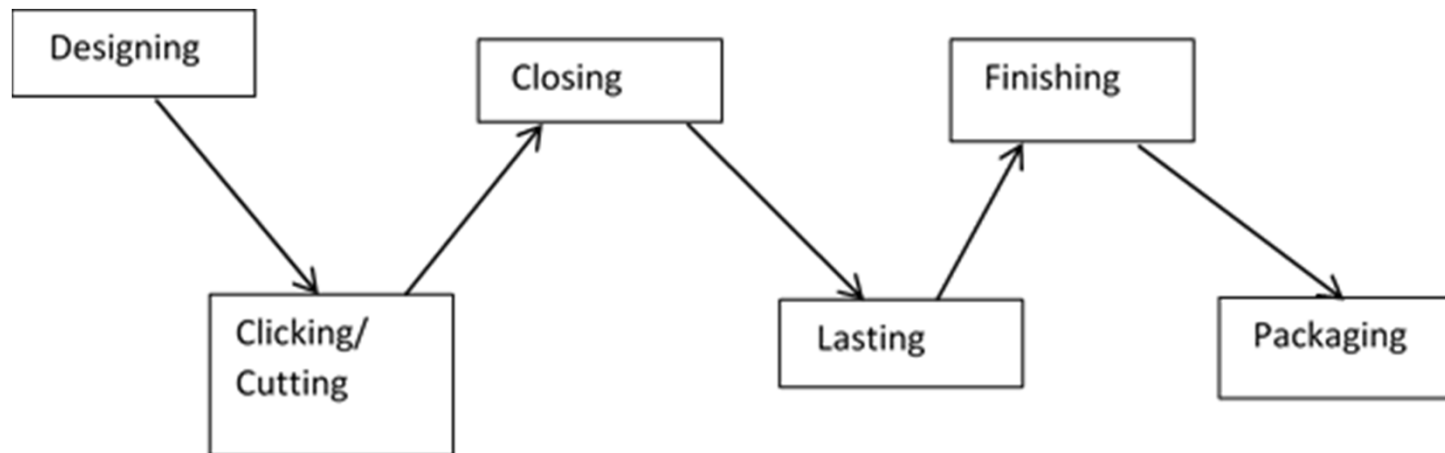
Status of technology employed by SMEs

1. Most of operations use /employ low level technology
2. Much work is manual and few machines electrified
3. Old technology in use
4. Low level of use ICT and related technologies



Results and Discussions

Status of technology employed by SMEs



Footwear Manufacturing process



Results and Discussions

Status of technology employed by SMEs

S. No	Manufacturing stage	Available technology/current technology/	State at Kenyan SMEs
1	Designing	CAD for Shoe (Shoe master) CAD/CAM , 3D/2D scanners, CAD for Shoe, 3D printers, pantographs	Pencil, pens, Manila papers geometrical drawing instruments
2	Clicking/Cutting	Hydraulic clicking press, laser cutters , cutting knives, scissors	Hydraulic clicking press, Cutting Knives, scissors,
3	Splitting	Splitting machines,	Skiving knives
4	Skiving/ trimming	Skiving Machines/ skiving knives	Skiving machines, skiving knives
5	Assembling /stitching	Stitching machines assorted	Flat bed stitching machines

Table of equipment and machinery [..\status of the technology and current situation.docx](#)



Results and Discussions

Types of technology	Status of adoption	Frequency	Percentage
Soft technology	Adopted	0	0
	Not adopted	81	100
Total		81	100

ERP, TQM, JIT etc

Status of adoption	hard technology	Frequency	Percentage
Adopted		0	0
Not adopted		81	100
Total		81	100

CAM, GT, FMS



Results and Discussions

FACTORS AFFECTING TECHNOLOGY ADOPTION

	B (Coefficient estimate)	Df	Sig.
Adoption of Soft technologies			
Competition	1.761	1	0.000
Customer demand	0.743	1	0.241
Human Resource Technical Skills	2.270	1	0.002
Supplier of Technology	0.382	1	0.258
Top management commitment	2.254	1	0.001
Environmental sustainability	0.692	1	0.177
Government support	1.325	1	0.002
Availability of finance	2.328	1	0.001



Results and Discussions

FACTORS AFFECTING TECHNOLOGY ADOPTION

Adoption of Hard Technologies			
Competition	1.722	1	0.000
Customer demand	0.661	1	0.024
Human Resource Technical Skills	1.861	1	0.002
Supplier of Technology	0.541	1	0.258
Top management commitment	0.242	1	0.001
Environmental sustainability	0.770	1	0.017
Government support	1.715	1	0.002
Availability of finance	1.987	1	0.001



STRATEGIES TO EMPLOY TO BRIDGE THE EXISTING TECHNOLOGICAL GAPS

Factor	How to bridge
Availability of finance	<ol style="list-style-type: none">1. Fiscal policies on interest rates2. Non-collateral loans3. SME lending banks4. SME formalize their business to meet bank requirements5. Revolving funds from the government6. Formation of cooperatives7. Financial literacy and awareness on business financing8. Access to market
Human Resource	<ol style="list-style-type: none">1. Skills gap mapping and requirements2. Upgrading and equipping of existing facilities3. Creation of new training facilities and centers of excellence4. Creating international linkages for technology transfer5. Increasing enrolment to the leather sector- giving scholarships and other incentives6. Structured training for those already working7. Linkages with funding agencies/ training grants



Factor	How to bridge
Government support	<ol style="list-style-type: none">1. Policies to support SMES2. Tax-breaks and subsidies on machinery and inputs3. Availing of the technology through common manufacturing facilities4. Effective business support systems5. Financial policies6. Education and training support7. Market access/Protection of local market8. National strategy9. SMEs-FDI linkages10. Setting up of incubators and industrial parks



Conclusion

- Kenyan SMEs/Artisan have great potential for growth
- Low technology uptake and use of old and outdated technology in manufacturing mainly due to lack of finance, skilled labour, government support, among others
- Proposed Interventions to be put in place such as provision of cheap credit, access to market, tax-breaks, incentives, common manufacturing facilities, sponsored education, equipping of training facilities and training manpower
- policies which support SMEs and ease of doing business
- *Modernization will definitely require a large dose of investment for which availability of capital will be a major constraint. Since, most of the players in the leather sector are small and tiny industries, the government should take proactive steps for easing the capital constraint.*
- *Development of human resource is an important requirement of Kenya footwear and leather goods industry. In order to increase the availability of a large pool of skilled workers and artisans, efforts should be made to enhance training and capacity building infrastructure in the country.*
- *an appropriate detailed policy package and a road map for the fast tracking of technology uptake and development*



Acknowledgements

- COMESA/ALLPI
- DeKUT
- LAEA



References

- Doo, M., & Sohn, S. (2008). Productivity Improvement of Manufacturing SMEs via Technology. *7th WSEAS Int. Conf. on ARTIFICIAL INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA BASES*, (p. 448). Cambridge.
- Kumar, N., & Gupta, V. (2016). FOOTWEAR SECTOR IN INDIA: A ROLE OF ADVANCED TECHNOLOGIES. *International Journal of Research*, 196.
- Kurnia, S., Alzougool, B., Ali, M., & Alhashmi, S. (2009). Adoption of Electronic Commerce Technologies by SMEs in Malaysia. *Proceedings of the 42nd Annual Hawaii International Conference on System Sciences*, (pp. 1-10).
- Yusuff, R., Chek, L., & Hashmi, M. (2005). Advanced Manufacturing Technologies in SMEs. *CACCI Journal*, 1.
- Alila, O., & Ove, P. (n.d.). Negotiating social space: East African micro enterprises. *African World Press*.
- Al-qirim, & N. (2007). The adoption of e-Commerce communications and applications technologies in small businesses in New Zealand. *Electron. Commer. Rec. Appl.*, 6(4), 462-473.
- Ardjouman, D. (2014). Factors Influencing Small and Medium Enterprises (SMEs) in Adoption and Use of Technology in Cote d'Ivoire. *International Journal of Business and Management*, 9(8), 179.
- Mudungwe, N. (2012). *Kenya footwear cluster Baseline analysis*. Addis Ababa: COMESA/ALLPI.
- UNIDO. (2015). *Present and future role of Africa in the world of leather and derived product industry and trade*. Gramado: UNIDO.
- WorldBank. (2015). *Kenya Leather Industries, Diagnosis, Strategy and Action Plan*. Nairobi: World Bank.



Thank you

