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Identifying Innovation Opportunities to Improve the Competitiveness of the Jordanian Dead Sea Products Sector

Contents

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As such, the data presented in the report is based on many primary data sources through interviews with Jordanian professionals who work in the Dead Sea products field. The author is indebted to these individuals for their knowledge, cooperation and transparency. This report also draws upon data presented in a feasibility study developed by the USAID Jordan Economic Development Program (Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program)

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List of Acronyms and Abbreviations:

ABLE	American Business Linkages Enterprise
ACI	Amman Chamber of Industry
CAGR	Compound Average Growth Rate
CIDA	Canadian International Development Agency
CCD	Controller of Companies Department
CBI	Center for the Promotion of Imports (Dutch Acronym)
CRO	Contract Research Organization
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FDA	Food and Drug Administration
FD&C	Food Drug and Cosmetics
FPLA	Fair Packaging and Labeling Act
GCC	Gulf Cooperation Council
GCP	Good Clinical Practices
GDP	Gross Domestic Product
GLP	Good Laboratory Practices
GMP	Good Manufacturing Practices
GoJ	Government of Jordan
HCST	Higher Council for Science and Technology
ISO	International Organization for Standardization
JCI	Jordan Chamber of Industry
JD	Jordan Dinar
JEDCO	Jordan Enterprise Development Corporation
JISM	Jordan Institute for Standards and Metrology

List of Acronyms and Abbreviations (Continued):

JUST	Jordan University for Science and Technology
MSME	Micro, Small and Medium Enterprises
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RSS	Royal Scientific Society (Jordan)
SGS	Société Générale de Surveillance
SPF	Sun Protection Factor
SRF	Scientific Research Fund
ToR	Terms of Reference
UK	United Kingdom
USAID	United States Agency for International Development
USD	United States Dollar
UV	Ultra Violet

I. **Background**:

According to a recent study by the UN Economic and Social Commission for Western Asia (ESCWA), Micro, Small and Medium Enterprises (MSMEs) comprise about 98 percent of the total working enterprises in Jordan[1]. The majority of these MSMEs (92%) are micro and small and are unregistered at the Ministry of Trade and Industry[2]. MSMEs employ approximately 70 percent of the Jordanian private sector workforce but contribute approximately 40 percent of GDP[3]. In comparison, SMEs in the EU-27 countries contribute approximately 60% of GDP[4]. This fact sheds light on the need to provide services and support to enable Jordanian MSMEs to evolve to become more of a real driving force behind economic growth and job creation.

Dead Sea products constitute a real economic development and export opportunity for Jordanian MSMEs. The Dead Sea is a unique natural and mineral resource which is only shared by two countries. Dead Sea salts are a unique source of minerals, generated by unusual climatic conditions. The high concentration of minerals in Dead Sea water is unmatched anywhere in the world. In recent years the reputation of the healing and medicinal properties of Dead Sea minerals grew because of their documented efficacy with regard to skin ailments. More recently, the Dead Sea has become internationally known as a location which can offer complete and natural cures for skin problems and general healing[5]. As such, visitors began to travel to the area from all over the world.

Past studies of Dead Sea minerals have focused mostly on their therapeutic properties for skin diseases. More recent research is producing its encouraging results in the field of skin care and maintenance. As such, Dead Sea cosmetics are gaining an international reputation for their many unique and advantageous qualities for maintaining the youthful appearance of a person's skin. Minerals are essential additives that appear to have the ability to strengthen each layer of the skin. This imparts an anti-aging effect that can last for hours and even days. It is this effect which cosmetics manufacturers are trying to harness in developing and marketing cosmetics based on Dead Sea minerals.

[1] http://www.1stjordan.net/content/news/businessnews.html
[2] Ibid
[3] http://www.ebrd.com/work-with-us/projects/psd/jordan-msme-framework.html
[4] http://www.edinburgh-group.org/media/2776/edinburgh_group_research_growing_the_global_economy_through_smes.pdf
[5] HE Michael Nazzal: Oxygen levels at the Dead Sea are higher than at Sea level. Increased oxygen concentrations facilitate faster healing.

Dead Sea products are a sub-category of natural cosmetics. The global natural cosmetics market is expected by be approximately USD 10 Billion by the end of 2015[6]. Dead Sea products, which offer a unique value proposition because of the Dead Sea's unique geographic location and because of the unique mineral composition in Dead Sea water and Dead Sea mud, can be considered part of this market. Currently, Israel, the largest manufacturer and international distributor of Dead Sea products sells approximately USD 200 million per year[7]. Thus, there is great potential for additional, qualified and innovative entrants.

[6] Organic Monitor, USAID Dead Sea Cosmetic Pre-Feasibility Study, July 2010
[7] Israel Exports and International Cooperation Institute

II. **Introduction**:

The Economic and Social Commission for Western Asia (ESCWA) Technology Center have commissioned this study to determine where effort can be focused to develop the Jordanian Dead Sea Cosmetics sector. Jordan currently has a myriad of Dead Sea cosmetics producers, none of which are dominant in the international market. As such, ESCWA is interested in identifying structural challenges facing the sector and determining where effort can be focused, particularly with regard to innovation, develop, promote, and expand the exports and economic activity in this promising sector.

Dead Sea derived products could realistically become a foundation for strong and sustainable sector development. Jordan and Israel are the only two countries who have access to the resources of the Dead Sea. As such, there is a geographic oligopoly and an unassailable comparative advantage between these two countries. Currently Jordan is struggling to exploit the potential afforded by Dead Sea resources.

Jordan currently has 119 registered Dead Sea product companies[8] of which 29 are considered cosmetics companies and 42 are considered chemical companies[9]. The Chamber of Industry indicates that Dead Sea exports are approximately USD 5.4 Million[10] [11], whereas exports from Israel are approximately USD 200 Million[12] in 2014. This study will address the weaknesses among Jordanian producers and suggest recommendations to overcome these weaknesses to create better opportunities for sustainable and competitive economic development.

[8] Jordanian Ministry of Industry and Trade Companies Controller Department, website: http://www.ccd.gov.jo
[9] The Jordan Chamber of Industry classifies the Dead Sea Product Companies in three categories (Chemical, Therapeutic and Cosmetic)
[10] Dead Sea Products Manufacturers' Association, October 28, 2014
[11] Dead Sea Products Manufacturers' Association, Interview, December 29, 2014
[12] Israel Exports and International Cooperation Institute

The Jordan Chamber of Industry (JCI) indicate that the Dead Sea products' sector only exported JD 3.8 million (USD 5.4 Million) in 2013 and JD 2.9 Million (USD 4.0 Million) in 2014 (until November 30, 2014). These export figures are based on issued export licenses for Natural Therapeutic Products, Dead Sea Mud, Therapeutic Salts, and Medical Salts. Part of the inconsistency can be related to the different categorization of Dead Sea Product companies. There are three categories: 1) Dead Sea Natural Cosmetics, 2) Dead Sea Chemicals and 3) Dead Sea Therapeutic Products.

Official Dead Sea Products Exports (Jordan Chamber of Commerce data) are detailed in the table below:

Dead Sea Exports (In Jordan Dinar)						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Description						
Natural Therapeutic Products	1,474,921	1,174,213	1,612,005	1,409,412	1,574,056	1,198,576
Dead Sea Mud	1,114,474	1,584,303	1,162,707	1,239,367	1,499,463	1,176,205
Therapeutic Salts	348,995	420,810	868,128	665,850	672,079	404,327
Medical Soap	60,537	35,071	27,205	3,139,798	68,259	84,990
Total	**2,998,926**	**3,214,398**	**3,670,045**	**6,454,427**	**3,813,857**	**2,864,098**
Total (USD)	**4,235,771**	**4,540,110**	**5,183,679**	**9,116,422**	**5,386,804**	**4,045,336**

The Dead Sea Products Manufacturers' Association validates a USD 30 Million export figure[13]. According to the association, the discrepancy is due to poor and/or inconsistent classification of Dead Sea product categories from the Jordanian customs department[14]. Many Dead Sea based products, such as soaps, bath preparations, salts and raw materials are often exported without a clear Dead Sea reference.

III. <u>Current Situation</u>:

In Jordan, the Arab Potash Company has monopoly right to extract Dead Sea minerals (Carnalite) from the Dead Sea. Numeira, a wholly owned subsidiary of the Arab Potash Company, is the sole authorized commercial supplier of Dead Sea raw materials and mud. Thus, all Dead Sea cosmetic producers must buy raw materials from Numeira. In the past, this has caused some controversy.

Numeira tightly controls the sale of Dead Sea Minerals, salt and mud. It supplies a competing Dead Sea products company (ODALISQUE Dead Sea Products[15]) which is wholly owned by Numeira and also supplies competing Israeli Dead Sea cosmetics producers. There are questions regarding transfer

[13] Ibid
[14] Ibid
[15] http://numeira-odalisque.com/

pricing to ODALISQUE[16] as well as claims that Numeira may have provided better prices because of the volumes which the Israelis purchase[17]. Despite these claims some Jordanian producers do not feel threatened as the potential for added value is high enough to enable rigorous international competition[18].

<u>Potential Impact of Transfer Pricing</u>

The transfer pricing issue is potentially of great concern because Numeira is a monopoly. Potentially all inefficiencies in both Numeira and ODALISQUE can be covered by increasing the prices for Dead Sea Mud and salt to local manufacturers. Thus, inefficiencies are perpetuated in both companies at the expense of competing Dead Sea product companies. This provides food for thought with regard to industrial and sector policies regarding competition and monopoly. There may be a valid argument to remove the monopoly on Numeira for Dead Sea mud and salts and or prevent Numeira from owing a competing manufacturing and retail company.

Existing Jordanian Dead Sea product companies can be segmented into three general categories:

1. Buyers and sellers of Dead Sea raw materials. These companies buy from Numeira and sell to international buyers. These companies add little or no value to the raw material.
2. Companies which buy raw materials, process the material into <u>beauty and cosmetics</u> products, package the products, market and sell the products. Some companies sell locally only while others export. These companies provide varying degrees of added value and are of varying levels of sophistication, size and financial capability.
3. Companies which buy raw materials, process the material into <u>therapeutic products</u>, package the products, market and sell the products. Companies sell both locally and internationally. Companies have varying levels of sophistication and financial resources and as such provide varying degrees of added value.

A. Gap Analysis and Assessment

There are numerous gaps faced by the sector which prevent it from developing, growing and sustaining a lucrative export market. A variety of interviews were held with established Dead Sea product producers to identify the most pressing gaps facing the sector. Table 1 below describes the

[16] Dead Sea Products Manufacturers' Association, Interview, December 29, 2014
[17] Dead Sea Products Manufacturers' Association, Interview, October 29, 2014
[18] Dead Sea Products Manufacturers' Association, Interview December 21, 2014

most pressing challenges which face the sector and which limit the capability of the sector from developing internationally competitive products and exporting Dead Sea products[19]. The table also identifies potential international, regional and Jordanian research centers and service providers to help address the defined gaps.

Table 1: Gap Analysis

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
1	Poor economies of scale are achieved by individual Dead Sea product manufacturers (see Annex 8 Sector challenges)	Most Jordanian Dead Sea producers are small packaging and filling companies. Most of these companies invest in used or substandard manufacturing equipment which in itself has poor efficiencies. Poor economies of scale eat away at profit margins which companies could be making. Poor scale economies also prevent Jordanian companies from investing in brand	Economies of scale can be achieved if several existing producers agree to use an existing manufacturing plant, or agree to invest in a jointly owned manufacturing facility through a manufacturing cooperative[20]. Brand owners could focus on developing, marketing and distributing complimentary brands while leaving manufacturing to a specialized entity. Such a facility would also help create a national dominant Dead Sea brand identity. A jointly owned plant would allow for proper ISO/GMP certification costs to be spread among many brand	The existing Dead Sea products manufacturing association could facilitate the creation of a manufacturing cooperative.

[19] Gaps validated by Dead Sea Products Manufacturers' Association, interview on December 21, 2014.
[20] Dead Sea Products Manufacturers' Association, interview on December 21, 2014

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
		development, packaging and distribution development.	owners. Such a facility could become a national center of excellence for Dead Sea product manufacturing.	
2	Insufficient or no documented and published laboratory tests and studies indicating the claimed efficacy of Dead Sea products against specific maladies.	Lack of documented and published studies regarding the claims of Dead Sea products manufacturers creates lack of trust and credibility of manufacturers in the international natural products and cosmetics market.	Dead Sea manufacturers' product claims and benefits need to be tested and documented by the individual manufacturers.	Jordanian R&D Centers: • Jordan University for Science and Technology. (www.JUST.edu.jo) • Hamdi Mango Scientific Research Center (http://centers.ju.edu.jo/centers/hmcsr) • International Pharmaceutical Research Center (www.iprc.com) • Pharmaceutical Research Unit (www.pru.com.jo) • Pharmaceutical Research Center (www.just.edu.jo) • ACDIMA (www.acdima.com) • Triumpharma (www.triumpharma.com) • Royal Scientific Society (http://www.rss.jo/page/121)
		Lack of testing and research prevents Jordanian manufacturers from increasing the margins on their	Testing protocols to determine the efficacy of the various Dead Sea products against the claims need to be developed. These protocols must address relevant	United States[21]: • Cosmetic Test Labs (http://cosmetictestlabs.com) • Adamson Analytical Laboratories, Inc. • (www.adamsonlab.com)

[21] For a list of certified US cosmetics laboratories see: www.thesoapdish.com/testing-labs.htm

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
		products.	international testing standards. Tests needs to be carried out and the results documented and published in international journals. Testing could be done jointly between local and/or regional testing and R&D centers with international ones. Note: The USFDA has been cracking down on cosmetics manufacturers who cannot substantiate their claims. See: www.cosmeticsdesign.com/Regulation-Safety/FDA-cracking-down-on-improper-cosmetics-claims	• Advanced Testing Laboratory (www.advancedtesting.net) • BioScreen Testing Services, Inc. (www.bioscreen.com) • Chemir Analytical Services (www.chemir.com) • Clinical Research Laboratories, Inc. (www.crl-inc.com) • Covance (www.covance.com) • Hill Top Research, Inc. (www.hill-top.com) Europe[22]: • EVIC International (France) (http://www.evicinternational.com) • Eurofins (Germany) (http://www.eurofins.com) • Skin Investigation and Technology (http://www.sit-skin.de) • Proderm (Germany) (http://www.proderm.de) • Vrije University of Brussels (http://www.vub.ac.be/english) • DEAK (Hungary) (http://www.gop.deakszeged.hu)

[22] For a large list of international cosmetics and natural products laboratories see: www.courage-khazaka.de/index.php/en/service-en/cosmetic-testing-laboratories-en

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
				<u>Jordan</u>[23]: • Royal Scientific Society (http://www.rss.jo/page/121) • International Pharmaceutical Research Center (www.iprc.com) • Pharmaceutical Research Unit (www.pru.com.jo) • Pharmaceutical Research Center (www.just.edu.jo) • ACDIMA (www.acdima.com) • Triumpharma (www.triumpharma.com) <u>Regional</u>: • ClinServ (Lebanon) (www. Clinserv.com • 7 Fits (Lebanon) (7fits.com) • MEKConsulting (Lebanon)
3	Existing Jordanian CROs and testing laboratories are unfamiliar with international standards for international markets. The Jordanian FDA passed a law in 2010 requiring all	Jordan has more than five registered CROs. None of the have dermatological testing experience[25]. Jordanian manufacturers have been required to send samples of their products to	Jordanian CROs are not sought out to do product research and/or product development work on Dead Sea related products. This could become an international comparative advantage. (See Annex 2) Jordan possesses several national testing facilities and	Facilitate training with international clinical trial and testing research centers such as those mentioned above.

[23] Jordan Association of Pharmaceutical Manufacturers (JAPM): http://www.japm.com
[25] Ibid

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
	dermatological products to be tested for Bio equivalency. A five year grace period was given and thus all dermatological products must be tested and registered by 2015.[24]	Europe and the US to obtain dependable required testing results which enable and facilitate export[26].	labs, none of which are felt to be able to provide the required testing for Dead Sea product manufacturers (SPF testing and product composition testing). The capability of these labs could be easily improved through training of staff on appropriate testing protocols and methods as well as the provision of certain testing equipment[27].[28]	
4	Most Jordanian Dead Sea product manufacturers do not have Good Manufacturing Practice certification (GMP)	Without GMP manufacturers cannot deliver consistent product quality all the time. Manufacturers are unable to sustain long term distribution in export markets.	Cosmetic products sold in Europe must be developed and manufactured according to Good Manufacturing Practice (GMP)[29]. In the cosmetics industry, ISO 22716 is GMP standard ensuring that products are safe and fit for purpose[30]. ISO 22716 is now being required by many countries outside Europe as a method to demonstrate compliance to cosmetic GMP[31].	• Pharmout (EU) (www.pharmout.eu) • Pharmaceutical Consulting Alliance (Germany) (http://www.gmp-consulting.com) • GMP Pharma Consultants (www.gmppharmaconsultants.com) • RUM for Calibration (Jordan) (http://www.rumcal.com) • ISO-Dubai-UAE (UAE) (http://www.iso-dubai-uae.com)

[24] Jordan Association of Pharmaceutical Manufacturers (JAPM), interview December 17, 2014
[26] Ibid
[27] The main issue in the required testing is testing for Sun Protection Factor (SPF) as well as the ingredients of Mud, Salt and other products - Dead Sea Products Manufacturers' Association, interview on December 21, 2014
[28] Dead Sea Products Manufacturers' Association, interview on December 21, 2014
[29] http://www.cosmetic-gmp.co.uk/
[30] Ibid
[31] http://www.cosmetic-gmp.co.uk/compliance

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
				• Naratech (http://www.naratech.net)
5	Most Jordanian Dead Sea product manufacturers have substandard packaging.	Packaging reflects the intrinsic quality and added value of the product it contains. Labeling is also critical. Packaging must have accurate labeling with regard to contents and method of use of the product.[32] [33]	Without excellent packaging Jordanian Dead Sea products will continue to be perceived as substandard in export markets. Substandard packaging makes it difficult to improve margins which reflect higher levels of added value. Manufacturers who wish to develop superior products must also invest in superb packaging to support their investment in product development.	• Design Institute Amman (www.Dia.jo) • Cosmetics Design (USA) (www.cosmeticsdesign.com) • Cosmetics Index (USA) (www.cosmeticindex.com) • Cosmetic Labeling (USA) (www.cosmeticlabelling.co m)
6	Lack of Export Capability	Most Jordanian companies do not export. This is due in part to complicated testing, registration, documentation and packaging requirements. It is also due to the fact that most Dead Sea manufacturers	Jordanian Dead Sea manufacturers need assistance to become export ready. This assistance includes awareness on market access requirements which cover tariff and non-tariff barriers, required testing, certification, registration of product files and documentation in export markets to enable Jordanian	• Technology Sciences Group (USA) • (www.tsgusa.com) • International Trade Center • (www.intracen.com) • Jordan Enterprise Development Corporation (JEDCO) • Jordan and Amman Chambers of Industry • Center for Promoting Imports from Developing Countries (Holland) (www.**cbi**.eu)

32 http://www.fda.gov/Cosmetics/Labeling/Regulations/ucm126444.htm#clga
33 https://www.cosmeticseurope.eu/using-cosmetics-colipa-the-european-cosmetic-cosmetics-association/labelling-.html

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
		are small and medium enterprises with limited financial resources. Exporting is expensive. The volumes purchased in export markets are often greater than the company's ability to self-finance raw materials as well as performance bonds. Additionally, many Jordanian manufacturers do not have the English language skills to effectively interact with international buyers.	manufacturers to individually or collectively achieve market access. Jordanian brand(s) must also provide competitive and compelling market entry requirements – such as marketing, branding, packaging, advertising, promotion, etc. In many cases, Jordanian manufacturers are too small to become export ready. They have to determine whether to export to sophisticated markets or continue exporting to Jordan's traditional markets which have weak and/or unregulated market access requirements. The sector could consider developing an export consortium which would create a single Jordanian brand, and require participating consortium members to work according to predefined GMP standards and submit to auditing.	• Competence Management Consulting (www.cmc-jo.com) • International Consulting Group (http://www.icgroupusa.com) • GCI International Marketing Consultants (http://www.hciexport.com) • M&H Consulting Services (http://www.mnh.co.in)
7	Jordanian product innovation is not	Most Jordanian manufacturers	Jordanian producers need to be introduced to the	• AT Kearney Innovation Management Training on the

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
	developed. As such competitiveness is weak.	produce ordinary products. Jordanian producers are unable to exploit higher margins due low product innovation and development. It is suggested that product innovation be directed towards defined areas (See Annex 7). Most Jordanian manufacturers lack a research and development (R&D) department.	importance of innovation in product development whether it is packaging and product application trends, new natural additives and components (essential oils, etc.) or other areas. Identified areas for immediate product development/innovation are: • Developing natural sterilization techniques such as pasteurization to eliminate bacteria in Dead Sea mud. • Naturally treating the sulfur content in the mud to eliminate/reduce the smell. Identify means to reduce and eliminate the smell while maintaining the mud's natural curative properties. • Natural means to maintaining an emulsified mud. Dead Sea mud separates into Dead Sea water (43%) and mud solids (57%). This decreases the salability of the product. • Dead Sea mud loses its colour over time. Maintaining/fixing the mud's color. • Investing in the design of filling machines and their components to combat the highly corrosive nature of Dead Sea mud. Existing filling machines do not	European IMProve programme. • Royal Scientific Society Industrial Chemistry Lab (Amman Jordan) • Center for Professional Advancement (http://www.cfpa.com/cosmetics-training) • Rinaldi Laboratories (http://www.aboverinaldilabs.com/Services.aspx) • Institute of Natural and Modern Cosmotech (http://cosmeticsinstitute.com/productdevelopment.html) • Avomeen Analytical Services (http://www.avomeen.com/services/product-development/common-ingredients-how-to-formulate-a-product) • Cosmetic Development Laboratories (CDL) (http://cosdevlabs.com/about-cdl) • Jasan Cosmetics Laboratories (http://www.jasancosmetics.com/development.htm) • Cosmetic Laboratories of America (http://cla-cosmeticlabs.com/portfolio/)

No.	Existing Gap	Analysis	Assessment	Research Centers or Service Providers
			last their expected functional life time[34]. Jordanian universities need to be introduced to the necessary protocols for cosmetics product development and innovation. Understanding the protocols will enable the universities to actively participate in Dead Sea product research and development (R&D) allowing them to assist national Dead Sea manufacturers with product development.	• Herrco Cosmetics (http://www.herrco.co.uk/development.htm) • Cosmetic Lab Inc. (http://cosmeticlabinc.com/Default.aspx) • GAR Laboratories (http://www.garlabs.com/product-development) • Laleham Health and Beauty (http://www.laleham.com/innovation/introduction) • Cosmetic Laboratories (http://cosmeticlaboratories.com/index.php/production-formulation-ingredients)

B. Suggested Recommendations and Action Plan

Table 2 below, has been developed to address the gaps identified and analyzed above:

Table 2: Action Plan Addressing the Identified Gaps, Estimated Activity Cost and Desired Outcome

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
1	Poor economies of scale are achieved by individual Dead Sea product manufacturers.	Identification of three or more Dead Sea product manufacturers who may be interested in outsourcing manufacturing to a single manufacturing/filling facility or invest in a new jointly owned manufacturing/filling company. Hold meetings with interested Dead Sea product manufacturers to gauge their	Negligible Negligible	Identification of interested and committed parties. Determination if an existing facility is to be used or a new facility to be invested in.

[34] Ibid

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		interest to utilize an existing manufacturing/filling facility or to invest in a new jointly owned facility. If there is interest in utilizing an existing facility identify the conditions and requirements for such outsourcing. If a new facility is to be invested in, develop and agree on the new company objectives, governance and management issues.	Negligible	Identify conditions for cooperation, governance and management structure for a new facility. Identify the financial investment commitment of the individual parties.
		Identify the required production capabilities and capacities needed to serve the needs of participating parties.	Negligible	Identification of product types to be produced. Identification of product volumes to be produced.
		Enter into a contractual agreement with an existing manufacturing plant (if this is the path chosen) for predetermined production capacities and product types. Or Size and price a new facility to meet the collective needs of the participating Dead Sea product companies.	Up to 3,500 for legal fees[35] To be negotiated. 15,000 for consulting work	Signed outsourced production contracts between an existing facility and several existing Dead Sea product Companies. Identification of the facility to be rented List of required equipment for desired production capabilities and capacities. Firm offers on the

[35] Estimate from the author (Laith Al-Qassem) based on previous experience in entering into contractual agreements.

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		Prepare to obtain the needed technical quality GLP/ISO-GMP) certifications.	7,000 – 25,000 depending on the company size and number of product lines.[36]	required equipment. Identified standards to be met by the existing or new facility and the required tasks needed to be accomplished to obtain the certification.
2	Insufficient or no documented and published laboratory tests and studies indicating efficacy of Dead Sea products against specific claims.	Focus group meetings with management of Dead Sea product manufacturers to identify what research would be most useful in proving the efficacy of Jordanian Dead Sea products and make Jordan an international reference for such research.	Negligible	A list of priority areas which need to be researched regarding the efficacy of Dead Sea products. Identify which company would be willing to fund such a study and determine if ESCWA is willing to subsidize such research.
		Development of Research or testing Terms of Reference (ToR) for the identified studies and laboratory tests.	Up to 1,500/ to prepare each ToR[37]	Developed ToR(s)
		Communicate with the identified research center(s) and laboratory(ies) to provide financial offers for carrying out the research defined in the ToRs. See Annex 1 for Research centers and testing facilities. Obtain offers from the laboratories and	Approximately 40,000[38] depending on the research required and the types of tests needed (in Jordan)	Offers from interested research centers and testing laboratories. Determine the various contributions to the research or study and the participation from

[36] Jordan Association of Pharmaceutical Manufacturers (JAPM), interview, December 23, 2014
[37] Estimate from the author (Laith Al-Qassem) based on previous experience in developing ToRs.
[38] Higher Council for Science and Technology, interview, December 23, 2014

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		research centers. Decide on a research center or laboratory to execute the required research/test and agree on a price. Seek out financial contribution for the research and/or study from the GoJ, SRF, HCST, etc.		the Dead Sea company, ESCWA, HCST, Scientific Research Fund. Select the most appropriate one to execute the study or test.
		Receive the research and publish the research in international publications.	Negligible	Research and/or test results are published in international Journals.
		Provide the participating company(ies) with the research results. Hire an advertising and communication company to transform research results into marketing materials.	4,000 – 10,000 to design scientifically based marketing material[39]	Effective scientific based marketing material which will increase the perceived value of Jordan's Dead Sea products regarding specific product claims.
3	Existing Jordanian CROs and test laboratories are unfamiliar with international standards for international markets. The Jordanian FDA passed a law in 2010 requiring all dermatological	Meet with Jordanian CROs, JISM, test laboratories and the Jordanian FDA to identify the required testing protocols and necessary equipment for dermatological, SPF[41], product composition[42] and bio-equivalency tests. See Annex 2. Determine priorities of capabilities which need developed within CROs and equipment which needs to be available. Identify interested CROs willing to fund	Negligible Negligible Negligible	A prioritized list protocols which need to be provided by Jordanian CROs. A prioritized list of required training and certifications which CRO staff must have to enable them to meet Jordan's FDA requirements.

[39] Estimate from the author (Laith Al-Qassem) based on experience with package designers and package design companies.
[41] Dead Sea Products Manufacturers' Association , Interview, December 29, 2014
[42] Ibid

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
	products to be tested for Bio equivalency. A five year grace period was given and thus all dermatological products must be tested and registered by 2015.[40]	in part or in whole the required training and certifications fees.		An equipment list for the required protocols. A list of interested CROs.
		Identify international institutions which can provide the required training and certification. Request quotations on the training and certifications for the CROs. Identify international equipment suppliers for required laboratory equipment. Request quotations on the required laboratory equipment. Select one or more training institutions to train Jordanian CROs on the required dermatological testing protocols. Agree on a training and certification schedule as well as the company which needed equipment will be purchased from. Agree on cost sharing between the CROs, ESCWA, Higher Council for Science and Technology (HCST), and other international (USAID, CIDA, etc.) and local funding sources (if any).	Negligible Negligible Negligible Negligible Negligible Negligible	List of competent international institutions that can provide training and certification. A contract with one or more institutions to carry out the training and the certification for the CROs. Agreed upon cost sharing with interested CROs, funding agencies and the Higher Council for Science and Technology (HCST).

[40] Jordan Association of Pharmaceutical Manufacturers, interview December 17, 2014

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		Undertake training with the selected institution(s). Procure the required training equipment from the selected suppliers.	Depends on existing equipment within the CRO.	Newly certified Jordanian CROs on required dermatological protocols and bio-equivalency. Newly installed laboratory equipment at participating CROs. National capacity and capability to carry out necessary dermatological testing to certify Dead Sea products for sale.
4	Most Jordanian Dead Sea product manufacturers do not have Good Manufacturing Practice certification (GMP).	Conduct meetings with the Dead Sea Products Association to determine which local manufacturers would be interested in obtaining GMP certification (ISO 22716). See company list in Annex 2. Identify which manufacturers are willing and/or able to contribute to GMP certification. Identify which local and international funding agencies (JEDCO, USAID's-Jordan Competitiveness Program, etc.) are willing to contribute to cost covering the GMP certification.	Negligible Negligible Negligible	List of companies interested in obtaining GMP certification. List of companies able to financially contribute to GMP certification costs. List of donor and funding agencies that are willing to financially contribute to GMP certification.
		Identify international and local consulting companies that can help local manufacturers prepare for GMP (ISO	Negligible	List of qualified consulting companies (local and

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		22716) certification. See Annex 2.		international) that can provide the required GMP preparation services.
		Identify international companies who grant GMP certification (ISO 22716) such as Lloyd's or SGS.	Negligible	
		Request quotations from the service providers on providing an initial GMP audit, preparation plan and conduct a GMP internal audit before the actual audit for certification.	Negligible	Received quotations from international consulting companies to provide technical services.
		Request quotations from GMP granting companies for carrying out GMP audits.	Negligible	Received quotations from GMP granting organizations.
		Select and contract with GMP certification institutions.	Negligible	Agreed upon payment terms and signed contracts with consulting companies and GMP certifying bodies.
		Select and contract with GMP preparation service providers.	Negligible	
		Carry out initial GMP (ISO 22716) pre-audit for interested Dead Sea product manufacturers.		Completed GMP Pre-audit
		Selected costing companies to provide a list of changes for the companies to become GMP compliant.	7,000 to 25,000 depending on the company size and number of product lines.[43]	Prepared action list for non-compliant companies.
		Carry out Mock GMP compliance audit by the GMP preparation company(ies).		Implementation of action items with Dead Sea manufacturers.
		Carry out real GMP audit on prepared Dead Sea manufacturing companies.		GMP audit takes place.

[43] Jordan Pharmaceutical Manufacturers Association (JAPM) interview, December 23, 2014

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
				GMP certification achieved.
5	Most Jordanian Dead Sea product manufacturers have substandard packaging.	Identify local companies who wish to upgrade their packaging to international standards. Identify those companies who are willing to pay for such upgrade or at least cost share. Agree on a cost sharing scheme with interested local companies. Identify existing local and international funding agencies who may be interested in co-funding (JEDCO, JCI/ACI, USAID, EU, others) Develop a ToR for at least identifying general packaging guidelines which need to be adhered to for export markets.	Negligible Negligible Negligible	List of local Dead Sea manufacturers who are willing to participate in upgrading their packaging. Identified cost sharing ability of individual companies. Identified local and international donor institutions interested in funding. Developed packaging ToR for the local industry.
		Contact local, regional and international packaging companies who have experience with cosmetics and natural products. See Annex 3. Obtain quotations for their services for both general packaging design guidelines and for specific company packaging design services. Select one or more service providers for packaging design to provide services and agree on a schedule for service provision.	Negligible Negligible Negligible	List of quotations from selected local and regional package companies. Selected companies to provide such services and set schedule for such service provision.
		Companies work with the selected service providers to review their existing	Up to 14,000 for packaging	Identified export packaging and labeling

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		packaging. Companies select and implement new packaging design and labeling developed by and with the experts.	design[44] Actual packaging and printing will depend on the materials used and the quantities[45].	requirements. Identified packaging and labeling gaps with existing Dead Sea product manufacturers. Several Jordanian companies with competitive and export compliant packaging and labeling.
6	Export Capability	Identify companies (local and international) that can work with Dead Sea product companies to make them export ready. See Annex 4. Identify local and international donors and funding agencies who would like to participate in developing Dead Sea manufacturers' exports such as JEDCO, USAID, JCI/ACI, etc. Identify the level of participation and contribution of the donors and funding agencies.	Negligible Negligible	List of companies who provide export consulting and export coaching services. List of identified and interested donors. Identified contribution levels per donor.
		Identify existing Dead Sea manufacturers who are interested in developing their exports. Identify Dead Sea manufacturers' ability to pay for professional services or contribute to export development. Develop with these interested companies	Negligible Negligible Negligible	List of interested local companies. Identified ability to contribute towards export consulting. Developed Export development

[44] Estimate from the author (Laith Al-Qassem) based on experience with package designers and package design companies
[45] Ibid

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		a ToR for export development consulting and coaching services.		consulting ToR.
		Receive proposals/quotations for export consulting and export coaching services.	Negligible	List or proposals addressing the developed ToR for export consulting and coaching services.
		Select and engage one or more consulting companies to provide export development services.	Negligible	Signed contracts with select export development consultants.
		Provide services to contributing and interested Dead Sea manufacturers.		
		Execute export readiness audits for individual companies and their products.	500 per company[46]	Export readiness audits for participating companies.
		Provide training to make companies export ready.	4000 per company[47]	Export training based on individual audits.
		Develop company specific export marketing plans with identified markets.	3000 per company[48]	Developed export marketing plans.
		Assist participating companies with export coaching and organize trade show participation.	2500 per company (excluding trade participation)[49]	Export coaches working with the export management of participating companies.
			Depending on the trade show	Attendance of identified international trade shows.

[46] USAID funded Economic Development Program - Figures assume a minimum participation of at least five firms together.
[47] Ibid
[48] Ibid
[49] Ibid

<table>
<tr><th>No.</th><th>Gap</th><th>Recommended Task/Activity</th><th>Estimated Cost (USD)</th><th>Desired outcome</th></tr>
<tr><td>7</td><td>Jordanian product innovation is not up to international standards. As such competitiveness is weak.</td><td>Hold focus group meetings with Dead Sea manufacturers who are interested in improving their innovation capability and competitiveness to identify areas to focus innovation effort (product development, packaging, delivery mechanisms, etc.) including company training/capacity building. Identified areas for immediate product development are:
Developing natural sterilization techniques such as pasteurization for the mud to eliminate bacteria, etc.
Naturally treating the sulfur content in the mud to eliminate/reduce the smell. The development challenge would be to identify means to reduce and eliminate the smell while maintaining the mud’s natural properties.
Natural means to maintaining an emulsified mud. Dead Sea mud separates into Dead Sea water (43%) and mud solids (57%).
Dead Sea mud loses its color over time. Maintaining/fixing the mud’s color is a potential area for innovation and research.
Investing in the design of filling machines and their components to combat the highly corrosive nature of Dead Sea mud. Currently, filling machines do not last their expected functional life time[50].
Identify local and international donors and funding agencies who would like to participate in improving innovation within the Dead Sea manufacturers’ sector such as JEDCO, USAID, JCI/ACI, etc. Identify the level of participation and contribution of the donors and</td><td>Negligible

Negligible</td><td>List of areas needing innovation including company training/capacity building.

Developed ToR(s) for the sector covering innovation for natural sterilization, sulfur treatment, water separation, color fixing and corrosion resistance for filling machines.</td></tr>
</table>

[50] Ibid

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		funding agencies. Identify Dead Sea manufacturers' ability to pay for professional services or contribute to their ability to innovate or integrate new innovation into their products. See Annex 5 for areas of possible innovation. Work with Dead Sea manufacturers to develop a ToR(s) for the desired areas of innovation and/or capacity building.	 Negligible Up to 1,500/ to prepare each ToR[51]	
		Contact innovation providers and capacity builders and provide them with the ToR(s) requesting proposals. See Annex 5. Receive and evaluate proposals for innovation. Select and contract parties for innovation and or capacity building as defined in the ToR(s).	Negligible Negligible Negligible	Receive proposals from innovation providers. Signed contracts with one or more innovation service providers.
		Schedule and hold innovation development and/or capacity building interventions with participating companies. Provide innovation coaching to participating Dead Product companies to assist them in implementing the results related to innovation in their own	Introduction to Innovation[52] 3,165/company Intermediate Innovation[53] 7,912/company Advanced	Held innovation development interventions. Held innovation capacity building interventions. Coaching individual

[51] Estimate from the author (Laith Al-Qassem) based on previous experience in developing ToRs.
[52] 2012 AT Kearney proposal to for the EU based Innova - IMProve Innovation Management Programme.
[53] Ibid

No.	Gap	Recommended Task/Activity	Estimated Cost (USD)	Desired outcome
		companies.	Innovation[54] 7,120/company Innovation Audit and Consulting training[55] 11,920/company	companies and their management on implementing innovation recommendations. Improved innovative products and management capabilities and capacities.

IV. <u>Proposed Methods to Add Value and to Innovate:</u>

In Jordan, one of the primary issues hindering the integration of innovation and research and development into manufacturing and service provision is in fact related to the owners of businesses. Most businesses owners do not identify knowledge as a primary input to production. Moreover, businesses owners often do not have a deep understanding of the drivers of their businesses. In the case of Dead Sea products, sophisticated business owners outsource product testing to international testing labs to validate the claims which Jordanian manufacturers are making (SPF levels[56], anti-acne, moisturization, etc.), while some others actually formulate the product based on published international research. Many manufacturers also outsource the actual product development to existing international cosmetics research labs, which develop products and mixtures based on existing trends and collective market knowledge.

A. Creating a National Brand and Facilitating Export Cooperation

As mentioned, Jordan has 119 registered companies licensed to manufacture Dead Sea products. Of these, only 29 to 42 of these companies actively export (companies which maintain active vocational

[54] Ibid
[55] Ibid
[56] Dead Sea Products Manufacturers' Association , Interview, December 29, 2014

licenses with the Chamber of Industry)[57]. Several issues are faced by most manufacturers, the most pressing of which are financial means, quality assurance and branding/packaging.

The development of a national brand and associated packaging and branding, along with the development and adherence to quality control procedures and standards, would enable many of the existing companies to do contract manufacturing for the national brand owner. Such a cooperative set up would allow local companies to develop their internal capabilities, while the brand owner would focus on brand management and international marketing.

Small local companies would be trained on quality assurance methods, techniques and documentation. This would enable them to develop capacity and start manufacturing at an internationally acceptable level. This has positive long term implications. Moreover, since most local Dead Sea product manufacturers are small, they do not have the financial wherewithal to export in a sustainable manner. The local brand owner would manage export sales with the associated export documentation, letters of guarantee and logistics requirements. Through the use of a brand owner, all participating companies would benefit from increased local sales, while the brand owner would facilitate and sustain exports.

B. Product Development and Formulation:

Product development, among the most developed manufacturers in Jordan is based on utilizing the results of internationally published research with regards to the efficacy of new active ingredients, carriers and product components. The manufacturers then pick and choose components and ingredients to address a perceived market need (acne, oily skin, psoriasis, etc.) to be incorporated into a new formulation. Once a new formulation is developed the company then sends the formulation to an international lab for testing against the targeted efficacy. In Jordan only one manufacturer has had its formulations tested in the UK, where the efficacy of the Jordanian product was deemed to be superior to existing, international brands[58]. C-Products, another Jordanian brand has the SPF characteristics of its products tested in Italian laboratories and product composition testing in the United States[59].

[57] Amman Chamber of Commerce Data (Economic Research Unit) indicate that 29 Dead Sea Cosmetics and 42 Dead Sea Chemical companies maintain their annual vocational licenses depending on their classification. These companies are operational or wish to maintain operational status.
[58] Dead Sea Products Manufacturers' Association Interview, Interview, October 28, 2014
[59] Dead Sea Products Manufacturers' Association Interview, December 29, 2014

Rarely, do Jordanian business owners understand the underlying objectives (or questions/challenges) which innovation is trying to address. For example: How does one effectively hydrate skin (moisturize)?

International cosmetics companies have been studying how best to deliver moisture through creams and lotions for decades. More recently, cosmetics companies are investing into the development of molecules (Nano-Particles/molecules such as Liposomes and Niosomes) to effectively deliver moisture and relevant nutrients to the skin or to protect the skin from Ultra Violet rays (SPF). Without defining such challenges or identifying a market need or opportunity, Jordanian business owners are forced to follow international trends instead of creating them and addressing real or perceived needs through innovation and research and development.

C. Testing and Certification:

As such, an opportunity exists to leverage Jordanian universities, researchers, research centers and Contract Research Organizations (CROs) to develop, document and public indigenous knowledge about Dead Sea minerals and a variety of additional regional homeopathic components. The need for testing and certification has increased since the Jordan FDA passed a law in 2010 requiring all dermatological products to be tested for Bio equivalency. A five year grace period was given and thus all dermatological products must be tested and registered by 2015[60].

Jordan already has a precedent with several CROs. The USAID Jordan Economic Development Program helped several Jordanian CROs obtain international certification (Good Laboratory Practices (GLP), Good Clinical Practices[61] (GCP), while providing them with a Laboratory Information System (LIMS) enabling Jordanian CROs to attract international pharmaceutical companies to perform clinical trials, bio-equivalence and bio-availability tests for new drug formulations in Jordan in accordance with international standards. Existing CROs could be technically supported to serve local Dead Sea cosmetics companies and build national capability and knowledge[62]. Competent CROs would be used to provide scientific proof of the efficacy claims made by existing Dead Sea product manufacturers. Over time, CROs could be outsourced by international cosmetics companies to develop Jordanian based formulas as well.

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[60] Jordan Association of Pharmaceutical Manufacturers, Interview (December 17, 2014)

[61] It is important to note that Jordan is the only Arab country that has passed human testing legislation. This is a great asset in developing, testing, documenting and certifying new drugs and cosmetics.

[62] Currently one Dead Sea Product manufacturer has contracted a registered Jordanian CRO to do research and trials on some its products.

The University of Jordan hosts the Mango Center for Studies. This center is a laboratory dedicated to doing research on Dead Sea products. Other national research and testing centers exist as well (such as the Royal Scientific Society, Hashemite University, Jordan University for Science and Technology) but as of yet none of these have developed the required specialization for cosmetic or Dead Sea product research and testing. Opportunities exist in Jordan to support company research through all these centers as well as develop the technical capability of the centers' staff related to cosmetics research and testing (international standards, FDA, etc.) and or support the procurement of needed additional equipment.

D. Research Support:

Several Dead Sea cosmetics producers felt that national research regarding the efficacy of Dead Sea minerals should be supported and published[63]. Such support and publication would greatly support/enhance the sales of Dead Sea cosmetics regionally and internationally[64]. Currently, claims by local manufacturers are mostly supported by Israeli research. Support and publication of such research would start making Jordan a reference on Dead Sea cosmetics. Support for such research could engage existing universities, research centers and individual researchers.

An additional area where product development effort (R&D) could be focused is related to Dead Sea mud. Dead Sea mud is one of the most important products sold by the sector. There are several identified challenges[65] related to delivering quality products.

1. Developing natural sterilization techniques such as pasteurization for the mud to eliminate bacteria, etc.
2. Naturally treating the sulfur content in the mud to eliminate/reduce the smell. The sulfur/sulfate is an important active ingredient to treat psoriasis[66], yet it is the cause of an unpleasant smell. The development challenge would be to identify means to reduce and eliminate the smell while maintaining the mud's natural properties.
3. Natural means to maintaining an emulsified mud. Dead Sea mud separates into water (43%) and solids (57%). Thus, users are often faced with an unattractive and separated mud, requiring them

[63] Validated through interviews with the Dead Sea Products Manufacturers' Association members
[64] Ibid
[65] Dead Sea Products Manufacturers' Association, Interview, October 29, 2014
[66] http://www.ncbi.nlm.nih.gov/pubmed/15574289

to mix or shake (which can be messy and inconvenient) before usage. Existing companies often add chemical emulsifiers which affect manufacturer's ability to claim that the product is "natural".

4. Dead Sea mud loses its color over time. The mud changes from a dark green to a brown color. Maintaining or fixing the mud's color is also another potential area for innovation and research.
5. Investing in the design of filling machines and their components. Dead Sea mud is highly corrosive due to the very high concentrations of salts, is extremely thick, and abrasive. Normal cosmetic filling machines are incapable of surviving the corrosive and abrasive nature of the mud. As such, filling machines do not last their expected functional life time[67].

E. Research Publishing and Asymmetric Marketing:

Once Jordanian research is completed and published, a more aggressive and innovative approach to marketing Jordanian products can take place. Currently, Jordanian Dead Sea products are unsuccessfully marketed globally and regionally. This is to a great extent because of the lack of fundamental knowledge of the benefits of Dead Sea minerals.

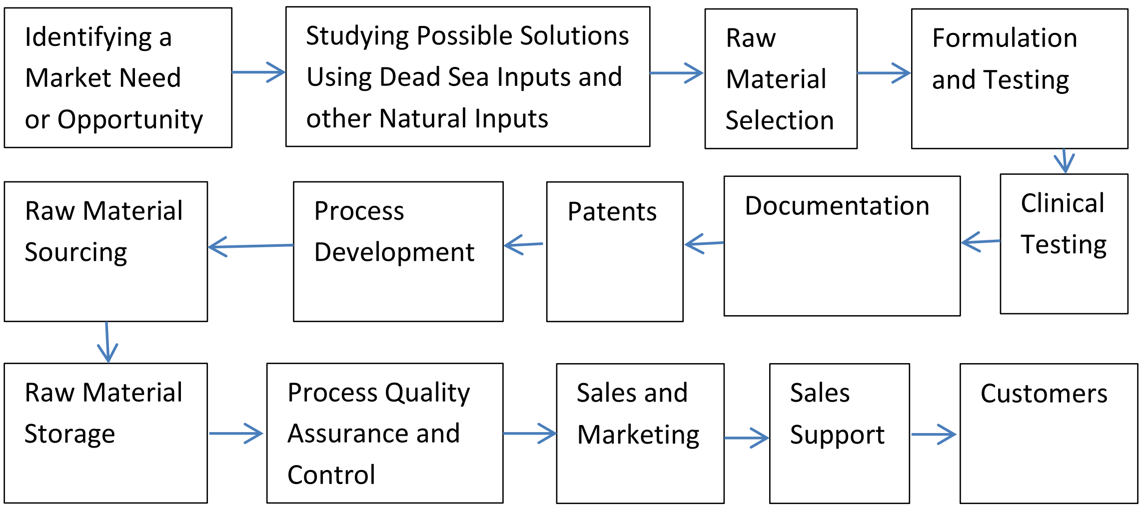
Once, proper research is done and published, this research can be presented through innovative channels such as social media and websites, in addition to conventional print (newspapers, brochures, etc.). AHAVA, an Israeli brand, currently dominates conventional marketing and distribution channels. Thus, Jordanian producers need to identify and enter markets where AHAVA is not present or weak (such as the GCC and other Arab markets) and promote themselves asymmetrically in a manner which creates new competitive advantage.

Innovation is a broad term which can be applied to the entire value chain of Dead Sea product manufacturing and the marketing and sales process. Many of the suggestions included in the below value chain and following table came from discussions with veterans of the Jordanian Dead Sea cosmetics market[68] [69].

In general, the Dead Sea Cosmetics value chain can be simply described by the following flow chart Figure 1: The Dead Sea Product Value Chain below. See Annex 7: Areas for Potential Product and Service Innovation.

[67] Dead Sea Products Manufacturers' Association, Interview, October 29, 2014
[68] Dead Sea Products Manufacturers' Association, Interview, October 28, 2014
[69] Dead Sea Products Manufacturers' Association, Interview, October 29, 2014

Figure 1: The Dead Sea Product Value Chain



V. Innovation with Natural Additives:

Many new natural product innovations involve the identification and addition of new natural oils derived from plants, spices, etc. A variety of natural additives have been researched through the internet and through site visits to indigenous homeopaths in Amman. Many of these components are readily available with Jordanian / Arab homeopaths that have used these components for decades in numerous crèmes, mixtures, and oils to address a variety of ailments and afflictions.

Table 3: Possible Natural Additive to Dead Sea Products below shows some designated components that need to be researched for their efficacy and incorporated into products (crèmes. oils, lotions, etc.) which show promise. Research is likely to be required to fix the benefits (prevent degradation of efficacy) of the natural ingredients within the new formulations as they may degrade over time within the packaging.

Table 3: Possible Natural Additives to Dead Sea Products

Purpose	Products	Relevant Oils/Ingredients	Benefits
Face	Anti-wrinkle cream	Bitter Almond Oil	• Reduces dark circles under the eyes • Improves skin elasticity and

Purpose	Products	Relevant Oils/Ingredients	Benefits
			• Improves skin clarity
		Peach Oil	• Anti-aging
		Grape Oil	• Eye area
		Pomegranate Oil	• Revitalizes the skin • Gives a healthier look
		Vitamins A,C,E	• Anti-aging
		Easyliance (hydrolyzed polysaccharide and Accacia gum)	• Active lifting ingredient • Removes wrinkles, especially for the eye area
		Renovhal	• Anti-Aging
		Carrot oil	• Reduces wrinkles, for youthful skin
		Parsley Oil	• Protects skin from wrinkles
	Anti-acne cream	Lemon Oil	• Antioxidant, • Cleansing and purifying properties
		Sage Oil	• Anti-bacterial
		Rosemary Oil	• Revitalizes the skin as it contains menthol, • Nourishes dry and oily skin
		Black Seed Oil	• Anti-bacterial
		Carrot Oil	• Reduces pimples
		Resveratrol found in grapes	• Anti-oxidant which can be used with the oxidant Benzoyl Peroxide to treat acne.
		Sopholiance S (found in wheat and grapes)	• Anti-bacterial properties make it useful for anti-acne and deodorant products
	Uneven skin tone cream/mask	Bitter Almond Oil	• Removes, reduces dark circles under the eyes

Purpose	Products	Relevant Oils/Ingredients	Benefits
			• Improves skin elasticity/clarity
		Radish Oil	• Stimulates blood circulation, • Eliminates blackheads and freckles.
	Moisturization	Jojoba Oil	• Moisturizing, nourishing, • Conditioning skin
		Peach Oil	• Anti-aging
		Sweet Almond Oil	• Clear and young looking complexion
		Bitter Almond Oil	• Removes, reduces dark circles under the eyes, skin elasticity/clarity
		Carrot Oil	• Improves skin color (sun tan)
		Pomegranate Oil	• Revitalizes the skin, • Gives a healthier look
		Abyssinian Oil	• For use in face creams, cleansing milk. • Good for sun protection, • Disperses and solubilizes UV filters. • Hydrating.
		Cognis	• Natural based emollient
		Black Seed Oil	• Used for cracked skin, • Addresses eczema.
		Safflower Oil	• Moisturizes skin, especially in winter
	Sun protection cream	Pterostilbene found in blueberries and grapes	• Prevents UV damage to skin
		Abyssinian Oil	• Good for sun protection, • Disperses and solubilizes UV filters.

Purpose	Products	Relevant Oils/Ingredients	Benefits
			• Hydrating.
		Olive Oil	• Has high SPF values
		Peppermint Oil	• Has high SPF values
	Cleansers (liquids, soaps, exfoliators)	Andean Quillaja (soapbark tree extract)	• Organic Surfactant • Increased cleansing power, • Non-irritating
		Abyssinian Oil	• For use in face creams, cleansing milk.
Body	Moisturizing creams/lotions	Cinnamon Oil	• Plumps skin, • Reduces eczema
		Thyme Oil	• Beneficial for rheumatism
		Coconut Oil	• Beneficial for dry skin
		Peppermint Oil	• Nourishes dull skin, • Improves oily skin texture
		Peach Oil	• Beneficial for dry and sensitive skin
		Jojoba Oil	• Gentle moisturizer
		Cloves Oil	• Beneficial for rheumatism
		Carrot Oil	• Improves skin color (sun tan)
		Abyssinian Oil	• For use in body lotions, • Hydrating. • Good for sun protection, • Disperses and solubilizes UV filters.
		Apricot Kernel	• Very mild natural oil for sensitive skin and baby care
		Sunflower Oil	• Antioxidant, • Brings nourishment to skin

Purpose	Products	Relevant Oils/Ingredients	Benefits
		Ginger Oil	• Stimulating properties, • Anti-inflammatory, • Soothes muscle pain and headache • Helps to maintain the mobility of joints
		Mustard Oil	• Promotes blood circulation, • Beneficial for joints
		Onion Oil	• Improves skin
		Cognis	• Natural based emollient
	Scrubs	Ecoscrub (polylactic acid)	• 100% biodegradable natural body scrub
	Cleansing soaps/gels	Andean Quillaja (soapbark tree extract)	• Organic Surfactant- • Increased cleansing power, • Non-irritating
	Massage Oils	Ginger Oil	• Stimulating properties, • Anti-inflammatory, • Soothes muscle pain and headache • Helps to maintain the mobility of joints
		Mustard Oil	• Promotes blood circulation, • Beneficial for joints
		Clove Oil	• Antioxidant, • Strengthens the immune system, • Antimicrobial
		Lavender Oil	• Rejuvenator and tonic for all skin types. • Relaxing and revitalizing
		Sesame Oil	• Can be used for

Purpose	Products	Relevant Oils/Ingredients	Benefits
			massage, especially for children as it is easily absorbed.
		Cinnamon Oil	• Improves blood circulation
Hair	Shampoos	Abyssinian Oil	• Improves shine to hair.
		Carrot Oil	• Adds glow, softness and nourishment to hair
		Coconut Oil	• Provides essential proteins for healthy, hydrating and shiny hair growth. • Can be used on damaged hair • Can be used to prevent dandruff formation.
		Rucola Oil	• Lengthens hair, • Adds shine, • Can be used for dry hair and split ends.
		Castor Oil	• Moisturizes dry hair and chemically treated hair, • Reduces frizz, • Increases shine
		Sage Oil	• Reduces white hair
		Onion Oil	• Healthy hair growth, • Prevents hair loss
		Garlic Oil	• Improves hair growth
		Sesame Oil	• Adds shine to hair, • Removes dandruff, • Darkens grey hair for people with premature grey hair, • Strengthens roots

Purpose	Products	Relevant Oils/Ingredients	Benefits
		Flax Seed Oil	• Helps prevent hair loss
		Rosemary Oil	• Anti-dandruff properties
	Conditioners	Jojoba Oil	• Moisturizes, • Nourishes, • Conditions hair
		Bitter Almond Oil	• Moisturizes hair
Nails	Nail creams/oils	Onion Oil	• Prevents nail infection
		Peppermint Oil	• Prevents nail infection
		Flax Seed Oil	• Strengthens weak nails

VI. Other Areas for Consideration with Innovation:

The following section suggests areas for research and potential product innovation and development for Dead Sea Natural products.

i. Packaging:

In addition to the changes to the ingredients added to the product itself, packaging natural cosmetics has become as important. Generally, consumers of natural cosmetics tend to also be environmentally responsible, and do not want to use packaging that would add to environmental waste. Moreover, plastic packaging normally used for cosmetics, contains BPA, which may leak into the product. When used as packaging for natural cosmetics, BPA threatens to leak into the product and damaging its purity[70][71].

The following are suggestions for packaging Dead Sea products:

- Glass: it is recyclable, yet may not be suitable for all natural cosmetics due to its fragility.
- Recyclable plastic: it is the most common form of packaging used for natural cosmetics.
- Recycled plastic
- Compostable/biodegradable plastic: this form of packaging has not been used for natural cosmetics yet. They are seen as appropriate as they can break down, without leaving any toxins[72].

[70] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program
[71] http://health.usnews.com/health-news/articles/2012/07/31/how-safe-are-your-cosmetics
[72] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program

- Polyfoil tubes: using these tubes have many advantages including having no preservatives, light and diffusion protection, impermeability to water vapor, corrosion resistance and longer lifespan to product.
- Slimming down the size of the package without reducing the volume of the product.
- The use of BOPP film. This could be done for labels and for wrapping products, securely storing them in a lightweight manner.
- Minimal design: packaging for natural cosmetics tends to have minimal design, with neutral colors in order to focus attention on the product itself, rather than the package.

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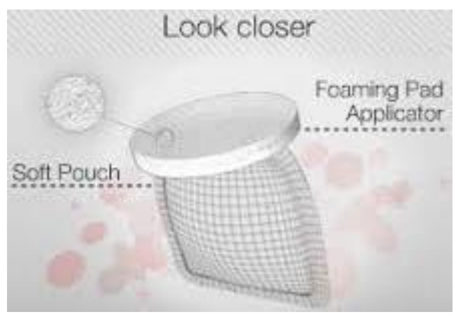
ii. Applicators

- Eye rollers for eye serums. This way, you do not have to touch the product itself.
- Disposable eye pods. The pouch is squeezed, making the product leave through the foaming pad (sponge), without having to touch the product.

Figure 2: Disposable Eye Pod Applicator



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iii. Nanotechnology in skin care

Nanotechnology is the study and use of structures between 1 nanometer (nm) and 100 nanometers in size[73]. Medical research has shown where nanotechnology can help with healing and repairing skin tissue. Thus, nanotechnology has application in the cosmetics field as it is believed that nanoparticles are more readily absorbed into the skin. There is some evidence that as new products are developed, nanotechnology may be used to inhibit graying hair and hair loss[74]. Several cosmetics products based on nanotechnology are already in use.

[73] http://www.understandingnano.com/nanotechnology-definition.html
[74] http://www.carefair.com/Skincare/Nanotechnology_in_Cosmetic_1420.html

The Observatory Nano report looks into some of the uses of nanotechnology in the cosmetic industry[75]. The report also provides an overview of research and development activity in this area[76]. Currently two main uses for nanotechnology in cosmetics are:

1. The use of nanoparticles as Ultra Violet (UV) filters. Titanium dioxide and zinc oxide are the key compounds incorporated. Organic alternatives (such as Nano-particles generated by Ivy Plants[77]) have also been identified and/or developed[78]. Nano-particles for to achieve desired Sun Protection Factors could be integrated into Dead Sea Natural products.

2. The second use of nanotechnology in cosmetics is for delivery. Liposomes[79] [80] and niosomes[81] [82] are used as conventional delivery vehicles in the cosmetic industry. Nano-structured lipid carriers, in particular, have been identified as a potential new generation cosmetic delivery agent to provide enhanced skin hydration, bioavailability, stability of the agent and controlled occlusion[83]. Encapsulation techniques have been proposed for carrying cosmetic active ingredients. Nano-crystals and Nano-emulsions are currently being studied for cosmetic applications. Moreover Patents have been filed for the application of dendrimers[84] in the cosmetics industry.

Nanotechnology can be used for the following purposes in natural cosmetics:

- Improved penetration: key ingredients are encapsulated in nano-spheres or nano-emulsions, allowing them to penetrate the skin in a stronger way[85]. This is useful for ***anti-wrinkle creams*** and for ***creams for uneven skin tones***[86].
- ***Hair products***: key ingredients in hair products are carried deeper into hair shafts[87].
- Nanoparticles as UV filters: Titanium dioxide and zinc oxide are made smaller for use in ***sun protection creams***, making them more transparent, less greasy, less smelly and more easily absorbed into the skin[88].

75 http://www.nanowerk.com/nanotechnology-in-cosmetics.php
76 Ibid
77 http://www.understandingnano.com/nanotechnology-skin-care-cosmetics.html
78 Ibid
79 A **liposome** is a tiny bubble (vesicle), made out of the same material as a cell membrane
80 http://www.news-medical.net/health/What-is-a-Liposome.aspx
81 Niosomes are a novel drug delivery system, in which the medication is encapsulated in a vesicle
82 http://pharmaxchange.info/press/2010/12/niosomes/
83 Ibid
84 A polymer in which the atoms are arranged in many branches and sub-branches along a central backbone of carbon atoms.
85 http://www.nanowerk.com/nanotechnology-in-cosmetics.php
86 Ibid
87 Ibid

- Solid lipid nanoparticles and nanostructured lipid carriers are used as ***delivery agents***. Delivery is more targeted, concentrated and efficient. This results in better skin hydration, bioavailability, stability of the agent and controlled occlusion.
- Nano-emulsions and nano-somes: these are used as a ***preservative*** for active ingredients (vitamins, anti-oxidants)[89].
- Fullerenes: tiny carbon spheres produced by nanotechnology which have ***anti-aging*** properties[90].
- Silver nanoparticles: they have ***antibacterial*** properties and are used as ***preservatives*** in shampoos and toothpastes[91].
- Gold nanoparticles: ***anti-inflammatory, antioxidant, tissue regeneration, reduces aging signs,*** and ***restores skin elasticity***[92]. Because of these properties, Gold nano-particles are used in face masks[93].

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iv. Skincare for different complexions and hair

When developing skincare and hair care natural cosmetics, it is essential to consider the differences in complexion and hair. Generally speaking, darker skin tends to be more sensitive, and can get dry easily. Thus dark skin needs to be well hydrated. Furthermore, the correct treatment of spots and acne is necessary for dark complexion, as their mistreatment may leave dark spots on the skin. The following natural oils can be considered when developing and producing cosmetics for different complexions and hair[94].

Table 4: Natural Oils for Cosmetics by Use

Use	Dark Complexion and Hair	Fair Complexion and Hair
Hair	Rosemary oil	Chamomile oil
Body	Chamomile oil, tea tree oil, lavender oil, jojoba beads with Shea butter (exfoliator)	
Face	Bergamot oil, tea tree oil, lavender oil, jojoba oil , green tea based cleanser, rose oil (toner), jojoba beads with Shea butter (exfoliator)	Castor oil
Hands	Tea tree oil, lavender oil	

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88 Ibid
89 http://www.ttl.fi/partner/nanoturvallisuuskeskus/tapahtumat/Health_effects_on/Documents/Sari%20Karjomaa%20-%20Nanomaterials%20in%20cosmetics.pdf
90 http://www.which.co.uk/documents/pdf/nanotechnology-and-cosmetics-161175.pdf
91 https://helix.northwestern.edu/article/nanotechnology-and-science-beauty
92 https://helix.northwestern.edu/article/nanotechnology-and-science-beauty
93 Ibid
94 International literature only covers dark and light skin. The author has not found literature for the Asiatic complexion.

VII. Jordanian Exports:

According to EUROSTAT, Jordanian export markets sales in 2008 for (skin care cosmetics, salts and soaps) comprised of sales to the Netherlands (USD247, 000), Spain (USD192, 000), France (USD 71,000), Austria (USD31, 000), Italy (USD19, 200) and UK (USD31, 800)[95]. It is apparent from the small export and fragmented amounts that local producers have no clear sustainable export or marketing strategies. Additionally, upon evaluation of existing product lines, it is obvious that the majority of local Dead Sea cosmetics producers suffer from low quality packaging and poor packaging design. Moreover, labeling does not meet International standards and there is a presence of unsubstantiated and illegal product claims.

VIII. The Competition:

The main competition of Jordanian Dead Sea cosmetics companies are Israeli companies. According to Israel Exports and International Cooperation Institute, total cosmetics revenues were estimated at USD 649M in 2013[96] out of which approximately 50% were Dead Sea cosmetics'[97].

Ahava (a privately owned Israeli company) is the only registered cosmetics company licensed by the Israeli government to extract/mine raw materials from the Dead Sea. Ahava leads a consortium of 60 to 80 Israeli companies. It is through such a consortium that Israeli Dead Sea product producers are able to achieve economies of scale in purchasing, manufacture and marketing as well as developing and controlling the quality of their brand[98]. The consortium provides a tangible strength to all Dead Sea product manufacturers in Israel. The success of Ahava is mainly driven by its use of natural ingredients in cosmetics. Ahava focuses on developing new formulas which combine Dead Sea salts with various plant extracts.

Ahava's market strength stems from its own branded stores in London, Berlin, Singapore and Israel. Ahava also plans to open more shops in the US. Moreover, Ahava has recently acquired 50% ownership in its exclusive U.S. distributor, called Ahava North America. Unlike, their Jordanian competitors, Ahava has distribution agreements with retail chains such as Lord & Taylor, Nordstrom, Bloomingdales, beauty-supply chain Ulta and Printemps in France.

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95 Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program.
96 http://www.investinisrael.gov.il/NR/exeres/456CEB74-672B-4975-877C-3F683EC2CF50.htm
97 Ibid
98 Confirmed through interviews with the Dead Sea Products Manufacturers' Association members

Israeli companies do face some challenges. The company labeled as "made in Israel" is 41% owned by the Kibbutz Mitzpe Shalem where it manufactures its cosmetics. This claim has raised a number of boycott movements against the brand. Most notably is the "stolen beauty campaign" which is obstructing the company from entering the cosmetic market in Netherlands and hindering it from acquiring points of sale because of boycotts in the UK and other countries.

Israel has other Dead Sea cosmetics companies such as the Natural Sea Beauty Brand. This company is owned by Interbeauty Cosmetics, a L'Oreal subsidiary (L'Oreal owns 65.5% of the company's shares). Additionally, Careline, a company which manufactures more than 2 million cosmetic units per month and has 700 product varieties emphasizes on its logo: "Israeli innovation inside". Dead Sea Premier: with 150 product items and 200 employees, the company exports to 26 countries.

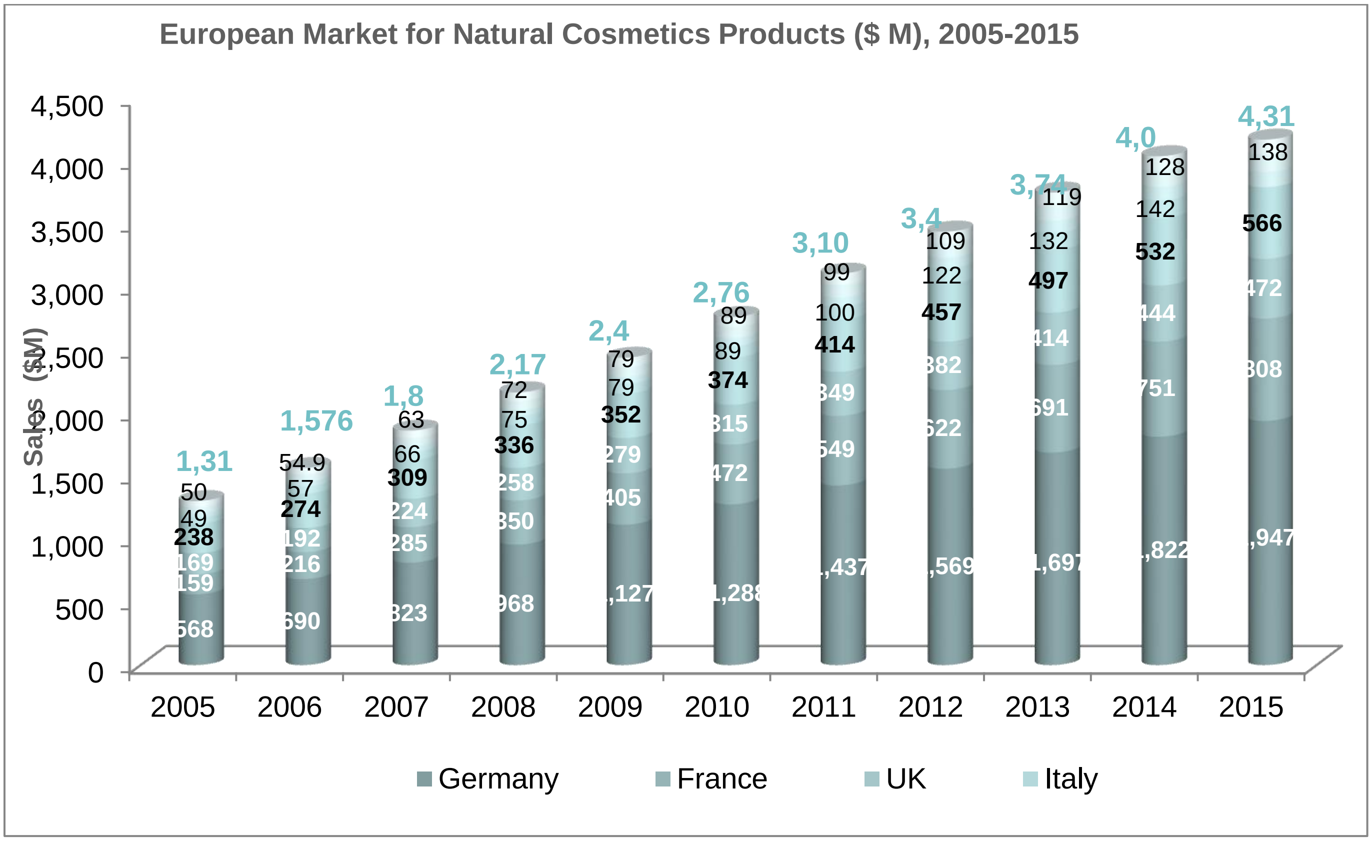
IX. **Potential Market Size (Europe)**:

According to a dated IBIS World Inc., the global cosmetics market revenues in 2008 totaled USD 182 Billion (ex-factory at constant prices)[99]. Global cosmetics revenues are expected to grow at an average rate of 4% per year. Revenues are expected to reach USD 234 Billion by the end of 2014[100]. Market growth is expected to be driven by the introduction of new innovations in products which integrate natural organic and green products.

The compound average annual growth rate (CAGR) over four year (pre 2008, the market grew at a compound average annual growth rate of 19%[101]. In 2008, Organic Monitor estimated the European natural products' market revenues at 2.2 billion in 2008. The market is expected to reaching USD 4.3 billion in 2015. Germany is the largest market in Europe accounting for 45% of European revenues, followed by France (16%), Italy (15%) and UK (12%)[102].

[99] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program
[100] Ibid
[101] Ibid
[102] Ibid

Figure 3: European Market for Natural Cosmetics Products ($ M), 2005-2015[103]



A. Barrier to Entry:

Globally, there are approximately 12,100 companies and establishments which manufacture and market cosmetics products (3,000 in Europe and 8,000 in the US). The conventional cosmetics market can be considered mature and saturated. The market is dominated by large players which have developed from economies of scale and low production costs. IBIS World estimates that the top 4 global cosmetics companies account for 40% of global cosmetics' revenues. It is expected that the market will continue to consolidate through mergers and acquisitions, as major players acquire increasing control of smaller companies. The mass market presents major barriers for new entrants as it is dominated by large players who control distribution and lead product development and innovation (they control trends). The opportunities which exist for small manufacturers to enter markets are through market niches such as natural and organic cosmetics products.

[103] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program

B. Geographical Distribution:

The two largest global markets are Europe and the US which constitute 40% and 28% of revenues respectively[104]. Per country the US accounts for 20% of global sales, followed by Japan (10%), Brazil (6%), Germany (5%) and France (5%). IBIS predicts new players to enter market from India, China, South Korea, Indonesia & Brazil[105].

Figure 4: Breakdown of Cosmetics Revenues by Geographical Area, 2009[106]

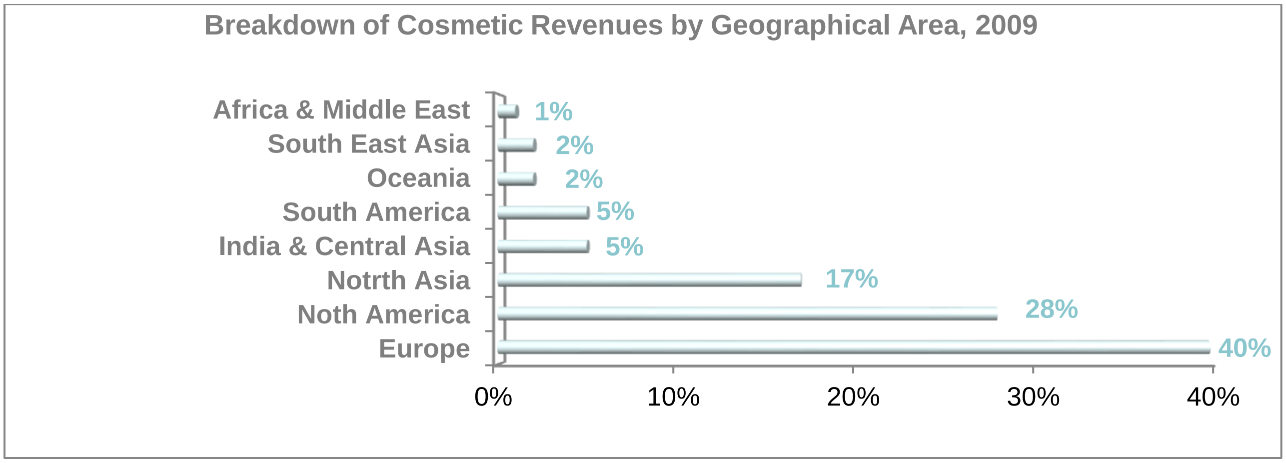
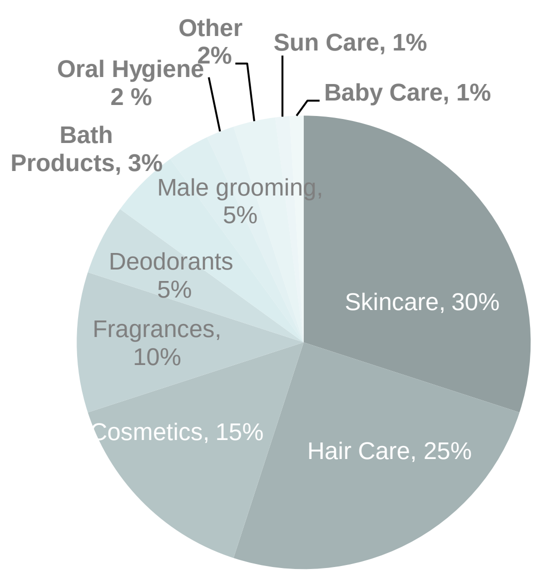


Figure 5: Breakdown of Global Cosmetics Products, 2009[107]



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[104] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program
[105] Ibid
[106] Ibid
[107] Ibid

C. Main Players (European Market)

The natural cosmetics market in Europe is comprised of approximately 400 suppliers. Fifty percent of these have less than 3% market share. Many of these companies entered the market in 2003 to take advantage of the developing natural products/cosmetics trend. However, very few have been able to develop a dominant or commanding market presence. Current market leaders are Waleda, a Swiss company and Wala Helimittel who have 15.5% and 7.4% market shares respectively[108].

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i. Distribution Channels (Europe)

- Specialist retailers: Specialist retailers constitute 48% of sales. Specialist retailers include herbalists and health and organic food shops. The market share of specialist retailers is expected to decline because the market is saturated with market saturation.
- Drugstores, pharmacies and para-pharmacies: These channels are expected to achieve the highest growth in market share.
- Supermarkets: Supermarkets and large retailers are expected to witness high sales growth.
- Other Distribution Channels: Account for 17% of sales[109]. These channels include department stores, perfumeries, direct marketing (e.g. QVC), beauty centers & aestheticians, spas and hair salons.

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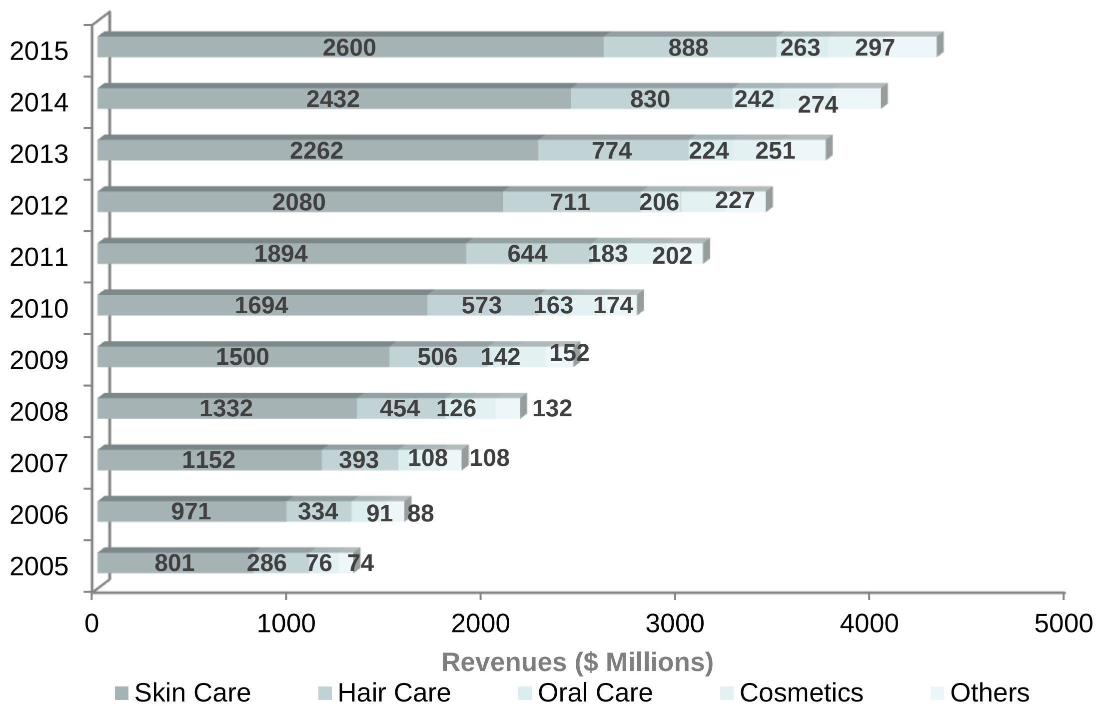
ii. Product Types (European Market)

- Skin Care: Skin accounts for the majority of personal care product revenues (approximately 61% in 2008), generating USD 1.332 Billion in sales[110]. This particular product category has been projected to grow at 8.6% (CAGR) between 2005 and 2015[111]. The most popular sub-category of skin care products are moisturizers, cleansers ad masks.
- Hair care products: The second largest product category in Europe is for hair care. Hair care products constitute 21% of natural product revenues in 2008[112]. Hair care products have been expected to grow at 11% (CAGR) between 2005 and 2015[113].
- Natural Cosmetics products (mascara, foundation, lipstick, etc.): Natural cosmetics products are expected to witness the fastest CAGR among cosmetic products. CAGR has been expected

[108] Ibid
[109] Ibid
[110] Ibid
[111] Ibid
[112] Ibid
[113] Ibid

to be 15% between 2005 and 2015[114]. This particular category is expected to account for approximately 7% of natural personal care products by 2015.

Figure 6: Breakdown of Natural Cosmetics Products by Category ($M) 2005-2015[115]



D. German Market

The German natural cosmetics market is the largest in Europe. The German market is the market with the largest number of private label retailers in Europe. In 2008, the total sales value in Germany (USD 968 Million) constituted 45% of the total European market (Organic Monitor). The German natural cosmetics market has witnessed strong growth (10% CAGR)[116]. 2015 revenues are expected to be close to USD 2 Billion[117].

The Major drivers of growth in Germany are highly correlated with significant consumer awareness coupled with very high per capita expenditures on personal care products. Moreover, there has been a

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[114] Ibid
[115] Ibid
[116] Ibid
[117] Ibid

substantial presence of natural products through specialist retailers for decades as well as considerable penetration of retailers' shelf space and development of sales channels.

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i. Market structure:

Most sales in Germany are generated from skin care products (approximately 60% of sales). The German market consists of roughly 150 suppliers each with small market shares. Most of the suppliers (75%) are German and Weleda, a Swiss company has the largest market share (15%). Other imported brands have less than 2% market share each.

E. French Market

The French market is the second largest and fastest growing market for natural cosmetic products in Europe. The per capita expenditure in France is USD 5.8. This is below the European average of USD 6.4. Total 2008 sales in France were USD 350 Million[118]. Sales in France are expected to increase and to reach approximately USD 810 Million in 2015. Sales growth is mostly fuelled by the expansion of retail channels.

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i. Market Structure:

The French market is made up of approximately 100 small suppliers most with less than USD 1million sales per company. French manufacturers account for 75% of sales. A large number of new private label products were launched in 2008. Skin care accounts for 60% of sales. Fifty percent of skin care sales are generated from face care products[119].

F. Italian Market

The Italian market is the third largest European market for natural cosmetics. In 2008 Annual sales were USD 336 million. Italy has the slowest growth among European countries because of the limited retail and sales channels for natural cosmetics. Italy is a competitive market and there is a solid presence of Italian companies[120].

G. UK Market

The UK market for natural cosmetics constitutes 11.9% of total European market. Natural cosmetic's revenues reached USD 258 Million in 2008. The UK's market share of the total European cosmetics market is expected to 11% by 2015. The UK's annual USD 4 per capita expenditure on natural care

[118] Organic Monitor
[119] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program
[120] Ibid

products is one of the lowest in Europe. Revenue growth for natural cosmetics in the UK is expected to be 9% which is below the EU average and revenues are expected to reach USD 474 in 2015.

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i. Market Structure:

The UK market is made up of approximately 100 suppliers. The majority of the suppliers are small with less than Euro 1 million in sales annually. The UK market is the most open market in the EU for foreign players. The market share of private label natural cosmetics is increasing but constitute less than Euro 1.5M in sales. In 2008, British companies' revenues constituted only 45% of UK. Many foreign brands exit in the UK market, accounting for more than 50% of total revenues.

H. Benelux

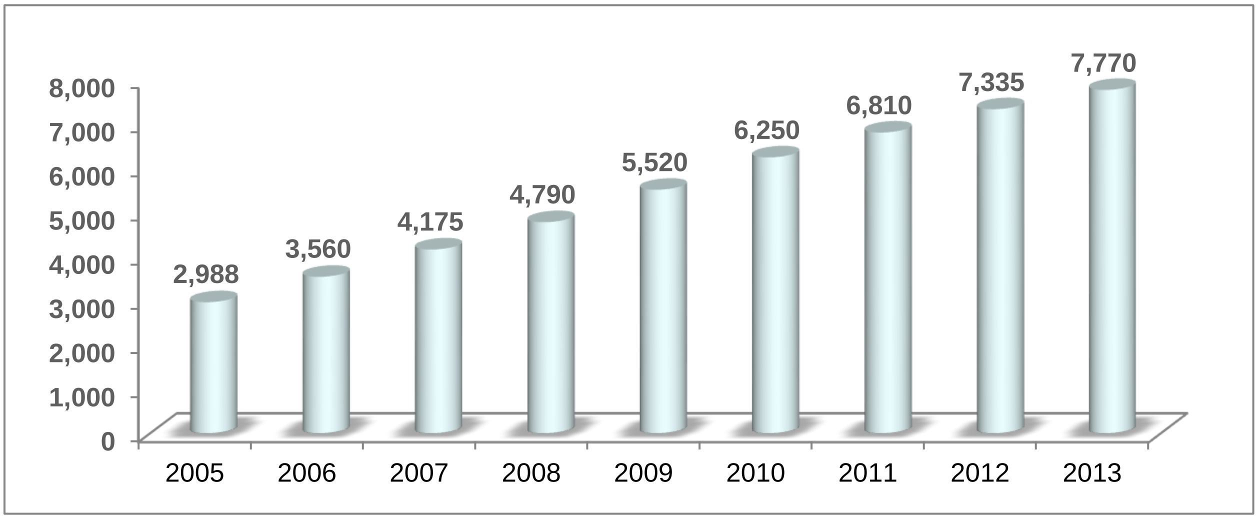
The Benelux natural cosmetics market is the smallest in the EU constituting only 1.2% sales of total European cosmetics market. Benelux revenues in 2008 were USD 75 Million. Sales revenues of natural cosmetics are expected to double by 2015. There exists a large opportunity for foreign companies to penetrate this market because domestic companies account for only 30% of sales.

I. The United States Market

In 2008, Sales of natural cosmetics in the US market made up 61% of the global natural cosmetics market. Natural cosmetics' revenues in 2008 were approximately USD 4.790 Billion[121]. Organic and natural Skin Care Products constitute 50% of the natural cosmetics sales in the US or approximately USD 2.4 Billion. Hair care makes up the second largest product category in natural and organic cosmetics. As of 2008, skin care and oral care are expected to demonstrate the highest growth rates.

[121] Organic Monitor

Figure 7: Natural Cosmetic Products Retail Sales in the US ($M) 2005-2013[122]

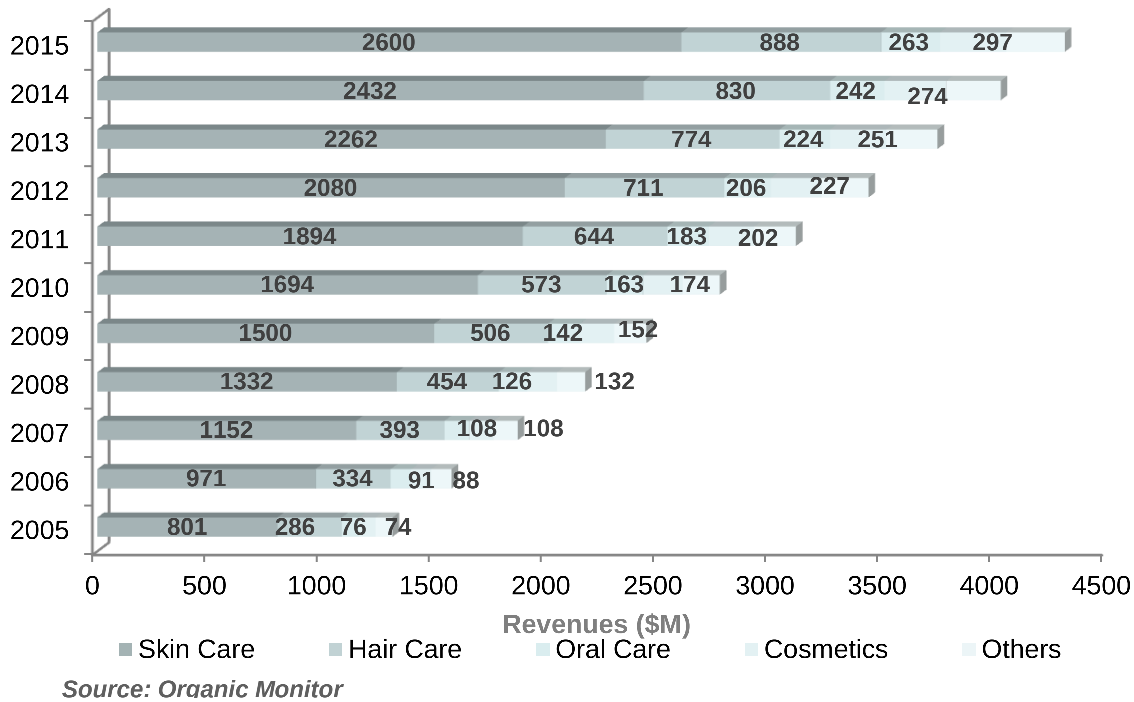


i. Market Trends (United States)

The purchase of lotions, oils and salves are entry points into natural cosmetics for many consumers. In the US market, body skin care products are more prevalent than facial products. Body skin products are expected to demonstrate the largest growth within the US personal care product market.

[122] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program

Figure 8: Breakdown of Skin Care Products ($M) 2006 – 2013[123]



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ii. Competitive Environment (United States):

The US market is considered highly competitive with low market entry barriers. It is however a fragmented market with around 500 suppliers (manufacturers, importers and brand owners)[124]. Very few companies generate retails sales in excess of USD 50 Million[125]. The majority of suppliers are small with less than USD 5 Million in annual sales[126]. Over 90% of natural personal care products sold in the US are locally manufactured[127]. The two leading imported brands are Dr. Hauska & Jurlique.

[123] Ibid
[124] Ibid
[125] Ibid
[126] Ibid
[127] Ibid

iii. Market Players (United States)

No single company in the US market has over a 10% market share[128]. The current market leader, Burt's Bee has a 9.2% market share. Mass market retailers generate 60% of Burt's Bee's sales[129]. The second largest company, Aveda, has a 7.5% market share[130]. Aveda was the first company to develop, produce and market natural care products for the Salon & Spa market. The remaining market players in the US each have less than 0.7% market share.

J. Market Trends

Skin care constitutes the largest cosmetics market segment with a 30% market share followed by hair care with a 25% share[131]. There is a growing international trend for natural/organic products and an opportunity for the introduction of new products with specific ingredients targeting niche markets;

- Grooming products for men which cater to the image conscious male
- Youth segment products targeting infants (baby care) and adolescents/teen
- " teen and tween boom"- including aromatherapy products
- Face and body care products for aging baby-boomers. This includes anti-aging, firming body care and other face and body care products.
- Nutri-cosmetics (integrating nutrition with body and skin care).
- New Spa products focusing on beauty.
- The integration of including new ingredients such as fruit acids, aloe vera, etc., and vitamins A, C, D and E.

K. Market Drivers: Natural Cosmetics

Natural cosmetics are products made from plant extracts and natural ingredients containing a minimal amount of chemicals. According to Organic Monitor, the main drivers of growth are;

[128] Dead Sea Cosmetics Company Pre-Feasibility Study, June 6, 2010, USAID - Jordan Economic Development Program
[129] Ibid
[130] Ibid
[131] Ibid

a. Increasing demand for certified, natural, organic cosmetic products incorporating vitamins, minerals and chemical friendly components.

    i. This demand has been led by increasing consumer awareness of the possible dangers of synthetic chemicals such as phthalates, aluminum salts and other components in cosmetics & toiletries.

    ii. Increased environmental concerns towards environmental considerations rise of eco-consumerism and demand sophistication.

b. Market introduction of new and novel products.

    i. Increasing market entrants attracted by promising market prospects. This will trigger the launch of focused innovative products targeting identified market segments.

c. Increased market presence through different distribution channels.

    i. Natural cosmetics are mostly distributed through health food & herbalist shops. More recently, natural cosmetics have penetrated new distribution channels including;

        - Mass market retailers: These include, hypermarkets, supermarkets, drugstores, and pharmacies many with private labels
        - Specialty Department stores and perfumeries
        - Non retail channels such as spas, beauty centers and hair salons

X. Market Access Requirements:

A. Europe:

Cosmetics products marketed and sold in the EU are subject to the European Cosmetics Directives. For example, EU REACH Regulations N0 1907/2006 - Stipulates that chemicals entering EU Markets should be registered in the REACH systems. EU regulations are enforced at the national level. Each EU member state has an authoritative body that is responsible for enforcing and upholding compliance.

EU directives required that cosmetic manufacturers or importers must obtain pre-market approvals for cosmetics products manufactured within or imported into the EU. Only notification of a competent authority is required. EU regulations require that manufacturing, handling and testing procedures satisfy Good Manufacturing Practices (GMP) requirements and are in accordance with ISO 22716.

New EU Directives aim at reinforcing product safety by clearly illustrating minimum requirements for the cosmetic product safety assessment while decreasing administrative costs for businesses by 50%. This is intended to be accomplished through a simplification of notification requirements

Notifying a competent authority requires that the person responsible for placing an imported cosmetic product in the EU market must:

- Notify the competent authority of the EU member state where the product is manufactured or where the product is first imported, before the product is placed in the EU market.
- Maintain certain product safety information (technical product file - Product Information Package) at the disposal of a competent authority.

In the EU, a designated Competent Authority checks the safety of the product , after being placed in the market. The competent authority ensures that neither manufacturer nor importer distribute products in the market which do not comply with EU directives.

Cosmetics manufacturers exporting to the EU have the obligation to ensure the safety of the cosmetics products under normal use and reasonably predictable misuse. This normally requires evidence of safety, in the form of an evaluation by a qualified person, who has considered the overall toxicological profile of the ingredients, their chemical structure and their level of exposure.

Jordanian manufactured cosmetics products are not subject to duty tariffs under the EU- Jordan Association Agreement.

B. United States:

There are two important laws which pertain to the cosmetics marketed in the US. These are:

1. The Federal Food, Drug and Cosmetics Act (FD&C Act) and
2. The Fair Packaging and Labeling Act (FPLA)

Cosmetic products and constituents are not subject to Food and Drug Administration (FDA) pre-market approval in the United States. The only exception is for color additives. Color additives must be approved by FDA before being included in cosmetics products.

Furthermore, cosmetics companies are not required to register their establishments, file ingredients' data or report cosmetics-related injuries to FDA. Nonetheless, companies are encouraged to register their product formulations and establishments with the Voluntary Cosmetic Registration Program at the FDA. Good Manufacturing Practices (GMP) are not mandatory for cosmetics manufacturing companies.

The FD&C Act does not oblige cosmetics manufacturers or marketers to safety test their products. However, the FDA strongly recommends that cosmetics manufacturers conduct toxicological and other tests required to validate the safety of their cosmetics

If a product is defined as a drug, the manufacturer must comply with pre-market registration and approval and must achieve GMP certification. It is important to note that certain products meet the definition of cosmetics and drugs when they assert two intended claims (eg. anti-dandruff shampoo, moisturizers with sun protection claims). In comparison to the EU, there is a small number of ingredients which are considered strictly regulated or prohibited.

Under the Jordan- US Free Trade Agreement, all exports of cosmetics and toiletries to the US are duty free as long as they comply with the defined of Rules of Origin.

Annex 1: Identified Research Centers

Jordanian Research Centers:

Jordan University for Science and Technology. (www.JUST.edu.jo)

Hamdi Mango Scientific Research Center

(http://centers.ju.edu.jo/centers/hmcsr)

Triumpharma (www.triumpharma.com)

Jordanian CROs[132]:

International Pharmaceutical Research Center

(www.iprc.com)

Pharmaceutical Research Unit

(www.pru.com.jo)

Pharmaceutical Research Center

(www.just.edu.jo)

ACDIMA

(www.acdima.com)

Triumpharma

(www.triumpharma.com)

Regional:

ClinServ (Lebanon)

[132] See contract Research organization members of the Jordan Association of Pharmaceutical Manufacturers (JAPM): http://www.japm.com

(www. Clinserv.com

7 Fits (Lebanon)

(7fits.com)

MEKConsulting (Lebanon)

United States[133]:

Cosmetic Test Labs (http://cosmetictestlabs.com)

Adamson Analytical Laboratories, Inc.

(www.adamsonlab.com)

Advanced Testing Laboratory

(www.advancedtesting.net)

BioScreen Testing Services, Inc.

(www.bioscreen.com)

Chemir Analytical Services

(www.chemir.com)

Clinical Research Laboratories, Inc.

(www.crl-inc.com)

Covance

(www.covance.com)

Hill Top Research, Inc.

(www.hill-top.com)

[133] For a list of certified US cosmetics laboratories see: www.thesoapdish.com/testing-labs.htm

Europe[134]:

EVIC International (France)

(http://www.evicinternational.com)

Eurofins (Germany)

(http://www.eurofins.com)

Skin Investigation and Technology

(http://www.sit-skin.de)

Proderm (Germany)

(http://www.proderm.de)

Vrije University of Brussels

(http://www.vub.ac.be/english)

DEAK (Hungary)

(http://www.gop.deakszeged.hu)

[134] For a large list of international cosmetics and natural products laboratories see: www.courage-khazaka.de/index.php/en/service-en/cosmetic-testing-laboratories-en

Annex 2: Contract Research Organizations (CROs)

Jordan[135]:

International Pharmaceutical Research Center

(www.iprc.com)

Pharmaceutical Research Unit

(www.pru.com.jo)

Pharmaceutical Research Center

(www.just.edu.jo)

ACDIMA

(www.acdima.com)

Triumpharma

(www.triumpharma.com)

[135] See contract Research organization members of the Jordan Association of Pharmaceutical Manufacturers (JAPM): http://www.japm.com

Annex 3: International Consultants for Good Manufacturing Practices Preparation and Certification

Pharmout (EU)

(www.pharmout.eu)

Pharmaceutical Consulting Alliance (Germany)

(http://www.gmp-consulting.com)

GMP Pharma Consultants

(www.gmppharmaconsultants.com)

RUM for Calibration (Jordan)

(http://www.rumcal.com)

ISO-Dubai-UAE (UAE)

(http://www.iso-dubai-uae.com)

Naratech (Jordan)

(http://www.naratech.net)

Annex 4: International Packaging Design Consultants

Design Institute Amman (www.Dia.jo)

Cosmetics Design (USA) (www.cosmeticsdesign.com)

Cosmetics Index (USA) (www.cosmeticindex.com)

Cosmetic Labeling (USA) (www.cosmeticlabelling.com)

Annex 5: International Consultants and Service Providers for Export Development

Technology Sciences Group (USA) (www.tsgusa.com)

International Trade Center (www.intracen.com)

Jordan Enterprise Development Corporation (JEDCO)

Jordan and Amman Chambers of Industry

Center for Promoting Imports from Developing Countries (Holland) (www.**cbi**.eu)

Competence Management Consulting (www.cmc-jo.com)

International Consulting Group (http://www.icgroupusa.com)

GCI International Marketing Consultants (http://www.hciexport.com)

M&H Consulting Services (http://www.mnh.co.in)

Annex 6: International Laboratories to Assist with Product Development and Innovation

Royal Scientific Society Industrial Chemistry Lab (Amman Jordan)

Center for Professional Advancement (http://www.cfpa.com/cosmetics-training)

Rinaldi Laboratories (http://www.aboverinaldilabs.com/Services.aspx)

Institute of Natural and Modern Cosmotech

(http://cosmeticsinstitute.com/productdevelopment.html)

Avomeen Analytical Services (http://www.avomeen.com/services/product-development)

Cosmetic Development Laboratories (CDL) (http://cosdevlabs.com/about-cdl)

Jasan Cosmetics Laboratories (http://www.jasancosmetics.com/development.htm)

Cosmetic Laboratories of America (http://cla-cosmeticlabs.com/portfolio/)

Herrco Cosmetics (http://www.herrco.co.uk/development.htm)

Cosmetic Lab Inc. (http://cosmeticlabinc.com/Default.aspx)

GAR Laboratories (http://www.garlabs.com/product-development)

Laleham Health and Beauty (http://www.laleham.com/innovation/introduction)

Cosmetic Laboratories

(http://cosmeticlaboratories.com/index.php/production-formulation-ingredients)

Annex 7: Areas for Potential Product and Service Innovation

Stage	Stage Name	Outputs	Areas of Potential Innovation	Possible Participants
1	Identifying a Market Need or Opportunity	Defined markets needs or opportunities with defined issues and maladies being addressed.	Identifying areas where conventional cosmetics are falling short. Identifying areas not addressed by conventional cosmetics (massage oils, inhalation therapy, etc.) Packaging Branding Application and use of the product	Existing cosmetics companies, Dermatologists, Marketers in the cosmetics field. Spa and beauty salon owners. Branding professionals
2	Studying possible Solutions Leveraging Dead Sea Inputs and Other Natural Inputs	Defined solutions through the use of Dead Sea minerals, muds, water, etc. Possible combinations with natural oils, particularly traditional and cultural homeopaths.	Making new use of Dead Sea minerals for conventional cosmetics areas such as (hair, skin, face, body, feet, hands, nails). Additionally, looking outside of cosmetics areas for opportunity such as combining regional essential oils and Dead	Dermatologists, Traditional and cultural homeopaths International researchers International published

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			Sea minerals for relaxation (massage oils, inhalation, etc.).	research
3	Raw Material Selection	Identifying useful components of Dead Sea minerals, mud and water. Identifying unique and useful natural and essential oils, particularly those related to the Middle East region. Documented results based on research of the applications and efficacy of specific ingredient uses (Dead Sea minerals, water, etc.) and traditional homeopathic oils.	Documenting traditional homeopath solutions to address defined maladies. This would require recruiting and exploiting traditional cultural knowledge. Scientific (clinical and controlled) testing and documentation of the use of Dead Sea minerals, water, mud etc., to address defined maladies and issues. Scientific (clinical and controlled) testing and documentation of the use of traditional and cultural oils historically used to address defined maladies and issues.	Researchers to research and document various traditional homeopathic remedies for defined issues and maladies. Scientific medical researchers to design and execute clinical studies to assess claims of homeopathic ingredients and Dead Sea products to address specific maladies.
4	Formulation and Testing	Extension of the documented research into possible product	Integration of components into traditional products such	Industrial chemists,

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		categories and mixtures. Existing Jordanian Contract Research Organizations (CROs) could be recruited and trained to carry out international standard testing and documentation for new formulations.	as crèmes, sprays, lotions, scrubs, etc. Development of new product uses (inhalation of mineral steam infused with essential oils). Development of new product application methods (inhalation, crèmes, sprays, immersions, scrubs, etc.) Possible integration or development of nano-particles as part of the delivery mechanism.	Marketing professionals in the cosmetics industries. Beauticians, Spa owners and salon owners. Nano-technologists Jordanian Contract Research Organizations
5	Clinical Testing	Structured and controlled testing of specific product category mixtures to address specific maladies and issues. Existing Jordanian Contract Research Organizations	Possibly none. This would have to abide by existing EU and US FDA requirements for export purposes.	Dermatologists and medical researchers. Hospitals Universities Jordanian Contract

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		(CROs) could be recruited and trained to carry out international standard testing and documentation for new formulations.		Research Organizations
6	Documentation	Documented results of the testing of new innovation product mixes and categories.	Documentation could be made available on line to help alleviate questions regarding the efficacy of the new products, mixtures and applications.	Dermatologists and medical researchers. Hospitals Universities.
7	Patents	Patent applications Supporting technical documentation and research. Test results	Integration of components into traditional products such as crèmes, sprays, lotions, scrubs, etc. Development of new product uses (inhalation of mineral steam infused with essential oils). Development of new product application and/or delivery methods (inhalation, crèmes,	HCST Medical Researchers Dermatologists Lawyers Universities Nano-technologists

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			sprays, immersions, scrubs, spatulas, gloves, magnets, nano-particles, etc.)	
8	Process Development	Defined specific manufacturing processes. Defined product specifications to be achieved in the product. Identified manufacturing components (vats, filling machines, ovens, mixers, etc.)	Process development for mixing and combining the components. Storage of components Storage of finished products. Packaging and delivery/ application methods.	Industrial chemists Process engineers Manufacturing engineers Industrial engineers
9	Raw Material Sourcing and Purchasing	Identification of where in the value chain the stock material components should be purchased (end crèmes, lotions, scrubs to be used as a foundation, or individual components of the crème (oils,	New, non-traditional material suppliers Use of new non-traditional or non-conventional materials. Material delivery (size, quantity, components, etc.)	International industrial material suppliers (raw materials). International intermediate goods suppliers (Crème stock, alcohol, scents,

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		glycerin, etc.), Identification of packaging suppliers (tubes, jars, tubs, sprays, pumps, foil packaging, paper packaging, labels, printers, cardboard boxes, etc.)	Group buying for many smaller manufacturers. Creation of a buying consortium to achieve economies of scale in purchasing.	oils, etc.) Packaging suppliers (tubes, tubs, jars, aerosols, foil wrapping, labels, printers, boxes, etc.)
10	Raw Material Storage	Define storage requirements and opportunities with suppliers. Storage and handling opportunities with logistics companies.	If manufacturing is distributed, storage can be developed per production run per company (modular amounts of ingredients). Material storage can take into account machines being used in production (filling systems) if there is a commonly used system. Natural oils and essences may need special storage. Natural oils might be extracted and distilled	Local material suppliers Foreign material suppliers Existing homeopaths and suppliers of essences. Packaging suppliers Inventory manager Production manager

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			immediately before manufacture for insured freshness. Could integrate with homeopaths to supply fresh natural oils and essences when needed (i.e. per production schedule). Packaging suppliers could hold inventory for the company. Could request product ingredient suppliers to hold inventory for the company.	Marketing Manager
11	Process Quality Assurance and Control	Documented quality control processes Quality Control Criteria Testing Criteria Sampling and testing criteria and methods	Documented quality control processes which could be provided to small producers to produce at an international standard. Training and capacity building of smaller Natural Dead Sea product producers to do	QC technicians Lab Technicians (in-house) Internal laboratories External Laboratories

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		Output/criteria per stage of production External laboratory certifications	contract manufacturing.	EU designated Authority
12	Sales and Marketing	Advertising campaigns Distribution methods Point of Purchase displays Exports Local contract manufacturing opportunities Improved national production capacity Improved and internationally competitive packaging for national and/or branded products.	Free trials at the point of purchase or retail outlet Private label manufacturing E-commerce Training for spas and beauticians You tube testimonials Trade show demonstrations. Training of salespeople Product use certification. Develop a national brand which small producers can	E-commerce experts Marketing experts CBI-Netherlands Center for the Promotion of Imports. Foreign Cosmetics and natural product importers Foreign wholesalers and retailers. Local, regional or international branding companies.

Stage	Stage Name	Outputs	Areas of Potential Innovation	Possible Participants
		Trained salespeople	manufacture to and package to. Market the national brand opportunity to small manufacturers (brand owner takes on a large portion of the local risk). Link manufacturing opportunity with a training and QA/QC certification program. Contract manufacturing with small local purchases according to defined specifications for export. Exportation of national brand. Creation and support of branded stores in a limited number of select export markets.	Advertising companies. Training companies on production processes and QA/QC methods and standards and documentation.

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			Training on exports (market access and market entry requirements).	
13	Sales Support			
14	Customers	Product usage	Teach customers how to use the products. Effective marketing materials. You tube videos showing how to best use the products.	

Annex 8: Sector Challenges

Poor Added Value and Weak Research and Development:

Jordan has a few entrepreneurs who manufacture high end products. Rivage, Zara and Universal are the current market leaders. In general, competition among Jordanian producers is price based. This indicates low added value and poor understanding of the product's potential value proposition. The poor product understanding leads to little effort with regards to innovation, design and product development. Moreover, most Jordanian producers are small in scale and are unable to achieve economies of scale or spend on product development to create high value added products. Weak local R&D has resulted in non-innovative and non-competitive products.

Poor Economies of Scale:

Economies of scale could be reached if producers cooperated. However, the Jordanian Dead Sea cosmetics market is characterized by a lack of cooperation between players to market and increase awareness about Jordanian Dead Sea products. As such Jordanian export sales are disparate and unfocused in any single market.

Product Quality Issues:

The Jordan US Business Partnership, a USAID funded project funded a Dead Sea cosmetics sector study which was executed in 2000. This study was carried out by the American Business Linkages Enterprise (ABLE) who used the services of veteran cosmetics, skincare and marketing executives and managers to assess the Jordanian Dead Sea cosmetics sector and identify US export opportunities. Although somewhat dated, the <u>general</u> findings of this study was that Jordanian bath salts, soaps and shower gels were rated as acceptable by these industry experts while moisturizers and specialty products were in general considered of unacceptably low quality.

Pricing Policies and Product Distribution:

The experts, in the study, also concluded that the lack of export pricing policies and developed distribution channels resulted in Jordanian manufacturers sacrificing their margins to wholesalers. Finally, the ABLE study also identified that <u>most</u> Jordanian producers lack product and quality assurance systems and certification for their products which weakens their value proposition in export markets.

Packaging and Branding:

The graphics of most of the packaging was considered too simple to be effectively sold in the US market. Two companies, Rivage and Zara, were the exception. However, even these companies were not considered outstanding. Their packaging was considered as merely acceptable. The members of the ABLE panel stated that the Jordanian producers should first identify their target market and then design the packaging to attract buyers from that market. The Rivage packaging is somewhat elegant, targeting, it appears, middle-aged women. Zara packaging, on the other hand, appears youthful, using bold colors and see-through, frosty packaging. Zara's packaging was also easily identifiable without the label. Instant brand package recognition is what competent package designers strive to achieve.

Most soaps and skincare products utilize double packaging. This is the industry standard. Labeling should be consistent on internal and external packaging with directions for use printed on the interior package, as well as the outside package with the product name and logo. Several of the soap products were shrink-wrapped inside the container. While shrink wrapping is acceptable, a sealed paper/foil pouch made of would be far more desirable. This method is used by a number of other high-end soap products.

Several of the Jordanian shampoos/conditioners and shower gels, used paper labeling. This is poor container packaging. Labels peel off and become soggy after repeated contact with water. Labeling on in-bath products should impervious to moisture and should not be easily removed regardless of whether the label is paper or printed plastic.