

Opportunities, risks and challenges for actual key players of commodities production into the new wave of industry 4.0

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Abstract: The actual dynamic of the industrial wave created by the concept Industry 4.0 is streaming a serial consequences for the main market consumers which are the direct beneficiaries of commodities or daily consuming goods of food, automotive, gadgets and textile /garments industry.Upon the actual researches available from Aachen University and World bank statistics as Birnbaum report ,if many of the products which belong to food and textile are defined by standard parameters ,so far less dependable of human working factor as direct making of product,the ready made garments production which now is more to be confused with fashion industry,is crossing a period of high challenges to be solved, fighting with the risks to be shrunk until disappearance.The key players which are involved in the whole commodities industry could be defined as the final customers or consumers looking for a permanent variety of items(1),main suppliers of production means(2) and in between we find the producer(3).This one need to handle the pressure of low market prices, frequent economic downturns and motivation of their main resource which are the people either defined as „blue collars” or „white collars”.

1 Introduction

The new wave of Industry 4.0 is looking for smart factories producers which are determined by high technology and relations under IoT(Internet of Things) and CRM (Customer relation management)concept which shall be considered as an important opportunity to get an improved quality and short cycle of making.Nevertheless in very few cases, the producers new concerns to get the needed „blue collars” are emphasized. Actually the border between the old „white and blue collars” is very thin and in the future most probably will disappear consequently by the nature of work intelligent parameters of digitalizing&smart factories.The ready garments industry is in a very risky position either will be melted to fashion manufacturing or will not be existing anylonger , trapped to the level of sweat shops of Asian countries doing simple products like the omni-present T-shirts or denim products no matter how „intelligent” fabric have inside .A certain start-up is recorded in Europe,but the road is long and the industry could be saved by integrated solutions with facilities for investments in education and payment systems which is revealing in fact another strategic partner, the government which shall be a vital stake holder of this long term country project.

The means & high tech tools for production have been attaining a high level of digitalization, but they are suitable to an industry of mass production with standardized good.On the other hand, the final client who must consume them,they are living into a market trend which attain the level of mass customization.Here,there is a gap which must be solved,because each of us want something customized, but we don’t want to leave the comfort zone as producers,wishing to continue a mass production of goods.

Perhaps the products having a content of standardized patterns in operations(as automotive,food, or technical textiles) are not too much concerned about the human resources involvement who are creating the goods, but a production of garmenting /fashionable goods need to solve as fast as possible the mentioned gap,besides an adapted motivation stimulus concept in order to preserve the cummulated know-how and to maintain the working skills of future generation of employees.The

statistics of the experts into the field show a slight improvement change of vision but the last figures of Birnbaum[1] report is not so optimistic about solving this challenge. However, an integrated country project must start activating the political & governments input, besides creating international clusters and also to a lobby movement for industrial field revival. These ideas which have been written before March 2020, should be still considered on this very critical moment of human kind which are facing together globally as worldwide the pandemic of Covid 19. Obviously is a deep crisis not only for humanity but also for economy and sustainable factors, from which we have to learn our lessons and use this unfortunate event to prepare ourselves and extract the opportunities. The best example are the Far East asian countries such as South Korea which due to previous experiences, succeeded to read the signs, become pro-active in research and create alternatives, thus stronger in controlling the health and economy situation. The contribution of Industry 4.0 is different by a comparative analysis with Industry 2.0 and 3.0[2]. Industry 4.0 is neither a new form of technology, nor business ideal, but in fact an approach inspired by new advancements to achieve results that weren't possible 10 years ago. The first industrial revolution saw the landmark the British farmers moving from land work to factory production in the 19th Century. Shall be considered as well that this step was done with a textile weaving machine which was the revolutionary equipment at that time. The second wave spanned the period from the 1850s to World War I from steam energy to steel industrial processing, marking then a new step of revolution with electric power as a source of energy and manufacturing at the size of first mass production. The third industrial revolution was drawing a clear landmarks referring the nuclear power, developing a break-through era of modern electronic technologies and the culture of total quality production with the first steps of information technology used for globalizing the communication. This period from 1950 to 1970 is marked as well by climbing to new industrial fields as bio-technology and dropping others as polluting extracting industry (i.e. the recession of mining industry in UK of 80's). The actual fourth wave then the leap towards digitization. Industry 4.0 introduce the paradigm of IoT (Internet of Things) and the entity of cyber-physical systems, using the infrastructure of sensors to collect high volume of data which are converted into information and commands able to improve the manufacturing process with fast feedback for further fast decisions.

Smart plants, which will be the key engine of Industry 4.0, could take the benefit of information provided in real time to revolutionize the processes by both automation and digitization. It means the machines shall be able of self-optimization, and even more of self-configuration to achieve the received tasks at superior cost efficiencies and better quality goods or services. The first step of Industry 4.0 is different compared to the previous waves as it began as a concept defined in Germany by an official public report in 2011, known to be as one of the first times that 'Industry 4.0' was defined. A revolutionary idea outlined the commitment of industrial revival on high-tech basis, whereas the manufacturing operations could be performed fully automated, without need of human intervention. The concept was world wide announced as political statement by Chancellor Angela Merkel, January 2015 at the World Economic Forum in Davos, where she was calling Industry 4.0[4] the way, quote "to deal quickly with the fusion of the online world and the world of industrial production." The following figures are quite old, which have been increased from 2015, the start-up was going to €200 million (around £146 million, \$216 million, or AU\$278 million) as German government is investing to encourage research across academia, business and government, and beside Germany, the United States shared the same visionary strategy. USA has developed a non-profit organization under the name of Smart Manufacturing Leadership Coalition (SMLC), gather producers, educational institutions, machine suppliers having the same goal of progress towards Industry 4.0. Here the examples are found more in the private business environment, not defined as official strategic policy. The aim has been defined of creating the smart manufacturing coordinated through an informational network which then creates the access to modeling technologies with potential of customization to meet particular needs. One of the crucial challenges is the need of qualified labor force to develop the services industry and the future need to re-vitalize the industrial sector, which actually is „outsourced“ spread worldwide. Certain figures report from KPMG has evaluated the component and non-durable (commodities) markets of Industry 4.0 to be worth more than

US\$4 trillion by 2020. This shows a result much beyond the initial forecast value of the Internet of Things (IoT) market, which Gartner has calculated to be around US\$3.7 trillion by 2020. Business entrepreneurial associations were able to persuade the USA government involvement to be able to reach important benefit from sharing the Industry 4.0 opportunities, with a recent government report stating the American manufacturing sector shall be around US 445 billion and create around 175,000 jobs. The value of Industry 4.0 comes from improving productivity and removing inefficiency at all levels, with cost reductions from using real-time data. Regarding the strategies into this field, in Romania, unfortunately the news are not very promising, so far only several magazines were mentioning about what is happening in the western developed countries of EU, a special master discipline at Technical University Bucharest and the interest of local branches of Siemens, Bosch, FESTO, or Vodafone. The last ones have automatically bearing the strategies of headquarter companies, which slowly trigger the movement and start the "engine" of concern related to Industry 4.0 in Romania. In one of his columns written in 2016, the professor Dorel Banabic [2] was drawing the attention that Romania is not yet prepared to face the challenges of the 4-th industrial revolution, which already started since 2011, but is not yet reflected into Romanian reality. Unfortunately from the moment of these reviews, not too much progress was recorded and consequently the production of commodities is suffering deeply from this lack of interest either from entrepreneurial side or government behalf. According to McKinsey study this "wait and see" attitude poses a high risk and it has to do with a number of implementation barriers faced by the manufacturers with limited progress in Industry 4.0. The business environment as described above could not marching always the working frame for industry of commodities, focused here on textile and garment industry, more limited for investments in such development project, risking to certain extend to perish if persist in this non-action status. For instance, Romania was for more than 30 years one of the most reliable producer into the field of textile and garmenting, recognized as well as one of the most traditional exporter of goods to Europe, USA and worldwide. Later, during the 90's decade, still the garment industry was supporting the export income of the country, well known for the expertise and flexibility into the field. More than that, the medium and high technical education was developed and create a tradition as well, nourished also from the know-how of several entrepreneurs which have the courage and determination to provide production for well-known brands with value added and full product service. The knowledge, experience and expertise gathered along the years could be considered as strengths and competitive advantage among the rest of European countries on top of flexibility and quick response to the market, worthwhile to be continued and integrated into the portfolio of main industrial sectors which could be supported and invested in. Perhaps is not too late to save at least the segment of garmenting/ready to wear products, as the textile industry (the initial link of supply chain) was almost disappearing in Romania. As long as the garmenting has succeeded to survive despite these difficult premises without supplies from Romanian textile enterprises, proved that manufacturers found creative solutions to stand-up and face the difficulties of global economic crises and the lack of financial support/facilities of government. Therefore, the technologies of Industry 4.0 shall be a great opportunity to be identified, applied and customized for this particular segment, in order to increase the productivity and replace the aging labor force and create the interest for the young generation.

2 Researching methods and results.

2.1 Preliminary analysis with updated global changes.

The actual paper work was started before the actual drama which we are living globally on the planet, whereas the objective was to draw the attention to the need of re-vitalise and sustainability of Romanian textile & garments industry, by integration and adapting into the new era of Industry 4.0, at least to the same level of other European countries. At this very difficult moment recorded on March 2020 of pandemic crisis, the mankind need this industrial field as one of the vital engine, in order to provide the health care and protection aids long time ignored as masks, protection suits, gloves and other medical items. Before any profit, big international brands holdings as Armani, Louis Vitton or

Balenciaga prove a high ethical spirit by helping the community,besides the flexibility in practical actions .The old dusty sewing machine/knitting & weaving loom could be turned into a valuable asset over night.If these important European companies are supported by governments with financial facilities or by the previous results of research & educational investments,in Romania , the textile & garments units are fighting with bare hands,having the benefit of „zero” support,to find resources or logistic guidance no matter if is public institution for homologation of materials or establishing standards of testing the technical/medical products.There is a general mobilisation of entrepreneurs to convert their production from mass or fashion wear into specialized items for medical purpose but is very difficult to bring a consistent assistance,if is missing a clear coordinate strategy at the level of official institutions,testing labs and approved materials to be used.Despite all impediments,still the local entrepreneurs are fighting to succeed.By saying this,another argument could be revealed that this industry deserve attention and massive support to be sustained as one the main player for the society.The investment will pay back later ,this field of activity could contribute to the national income,create jobs and stabilize the migration.

2.2 Benchmarks of textile & garmenting industry in the actual environment Industry 4.0

Initially the purpose of the study was to identify the benchmarks of the field to be compared versus actual status of romanian side.The purpose remain the same just the arguments are updated by taking into account the last consequences of pandemic crisis,showing the flexibility of the field to adapt towards the events and the need of this industry into the proximity of each country (outsourcing become suddenly not a good idea).Thus changing the paradigm and the approach of Industry 4.0 of switching by any price to cyberentities and Internet of things are sometimes not working in big moments of history .Therefore the pressure of reducing the working cost from operating poor human factor must be transferred to real sources of loss and inefficiency, one of them might be bureaucracy apparatus and army of desk officers living in a virtual reality .Germany's textile industry play a significant role in the digital transformation process of the German industrial sector in general as it is a future key supplier and adopter of digital operations technologies as well as Industry 4.0 solutions.

The industry provides key technologies,especially smart textiles,required for a successful transformation.Smart textile products hold large growth potential.According to market forecasts,the global market for smart textiles will grow from USD 0.1 billion in 2015 to about USD 3 billion by 2026.In order to produce smart textile products in large series or mass production scale and to unlock this potential,the hybrid and typically highly fragmented textile value chains will have to become increasingly interconnected.Germany's textile industry consists of about 700 predominantly small and medium-sized enterprises employing about 63,000 workers in total. Together they generated total revenue of EUR 11.58 billion in 2014.Additionally, there are numerous companies from adjacent sectors handling and processing textile products such as textile machinery, automotive suppliers, and synthetic fiber manufacturers.In the past few years, German companies have increasingly focused on manufacturing high-quality and research- intensive technical textiles. As a result, they successfully strengthened their global leadership position while facing severe challenges resulting from increased cost and innovation pressure, ever shorter product and innovation cycles as well as increased customer demands. Today, Germany is the global market leader for technical textiles with annual revenue of about EUR 13 billion [2].Regarding the trend and driver for textile industry in Italy, in September 2016, the Italian Ministry of Economic development presented the *Piano Nazionale Industria 4.0*(the National Industry 4.0Strategy),which provides concrete measures to support enterprises in favor of trigger investments in research and innovation in this area.The strategic decisions to be implemented at corporate level,especially when the company intends to be innovative,should be evaluated against the market macro trends.The megatrends act as a long-term development driver that impacts the business,the economy,the society,the cultures and the lifestyle.They originate from the inevitable global changes shaping the world-to-be,defining a set of needs to be answered that cannot be influenced by single entities, groups of companies or even countries.Hence,the business strategy for innovation and development must consider

these trend analyses and their involvement in the business. The trend analysis and the drivers of the textile industry,focused on the end user, allowed identifying how the business of this area will be influenced by the textile machinery market trends.In order to satisfy the user needs,the hardest challenge and opportunity in developing new processes and business models in the textile industry is the speed of the production processes (“fast time to market” and “just in time production”).The trend and driver analysis allowed identifying the strategic topics of innovation.The European textile and clothing industry is investing in response of the market macro trends. Technology gaps analysis made by ACIMIT with the support of RINA Consulting shows the following results[2].Hereby,specific examples from textile machinery companies that have already implemented a 4.0 approach for each of the three phases of the textile machinery production process are described.The observation between the current situation, represented by the considered sample of companies and the future perspective, represented by the roadmap,allowed to define what are the missing steps that a medium-sized textile machinery company need to implement in order to enable the Industry 4.0 scenario.For each step, the “technology gap” regarding hardware,skills and infrastructures has been evaluated.A feasibility study for the implementation of the identified enabling technologies has been defined for each phase:one star means that the gap is high;five stars represent a narrow gap.It appears that the production and the use and maintenance phases are organized to adopt and to implement the Industry 4.0 technologies.IoT systems and Artificial Intelligence algorithms are some practical examples for remote monitoring and predictive maintenance applications. The design and planning phase, instead, is far from the Industry 4.0 objective. Virtual reality and machine component simulation represent the first steps of innovation in this primary-phase.

2.3Strengths,weaknesses,opportunities,threats(SWOT)analysis

Industry 4.0 is focused on maximizing the synergies and the balance between the three key models of an enterprise:business,organizational and technological.The first two are related to intangible assets;while the third one represents the tool enabling the company to start an innovative process.In order to adopt an Industry 4.0 strategy,the use of new technologies alone is not enough.A cultural change in the company structure is needed by renovating the strategies the enterprise organization and involving people with precise skills.One of the greatest achievement of Industry 4.0 is converting any item into data which by their transforming to information allow real-time decision[5]for business.Furthemore,the next level of outcome is a high level of flexibility in production customization with superior quality,assuring the optimization of productivity for consuming market demanding quick response.

Beside the optimization of production parameters,the level of communication among various levels of teams and management is evolving to share a common goal,involvement and responsibility as innovation become as state of mind,shaping from the traditional pyramid organization model to a flatten trapezoid.From an antrepenorial point of view, applying a managerial tool as a S.W.O.T.analysis (Strengths,Weaknesses,Opportunities,Threats)will draw out the advantages and limits of the existing business model versus the new one improved by embracing the vision of new productive model of Industry tech 4.0.

Here below, the main features of the benchmarking for textile and garmenting industry are briefly described,taking as basis the examples provided by Germany and Italy(see table 1). Following these examples,a SWOT(strengths,weaknesses,opportunities,threats)is accomplished in order to identify the best strategies to proceed for(diagram 1).The weakness of manufacturers are focused to be solved,by taking the appropiate elements from external business environment such as opportunities and from internal organization strong points.The unfavorable threats from external environment must be scouted permanently to read the sign of economic alert and look for protection measures both for the enterprise and the other entities of the supply chain,especially the actual economic context become extremely volatile,therefore is mandatory for special actions on planning and forecast in the future:

Table 1. Benchmarking –textile /garmenting industry overall for Germany and Italy

Benchmarking phase 1	Benchmarking phase 2	Benchmarking phase 3
Performance measurement of a component during the use phase in order to improve the component design, throughout the mechanical simulation to identify new geometries and materials.	The use of embedded informatics of different production sections.	The utilization of intelligent management platforms with mobile devices for the monitoring of the work and the maintenance if needed.
The application of virtual reality technologies for machine and components design, combined with simulation software that enable multi-user both local and remote collaboration.	Collaborative robot(cobot) integrated in the industrial network.	Sensors embedded on the machine for data acquisition that permits the machine and product monitoring and the communication with other divisions.
The 3D printing used to create prototype rapidly enables an agile collaboration between different productive sections and allows a new flexible and personalized design	Example of a robot capable to interact with each other in order to optimize the transportation inside the company.	Predictive maintenance to optimize the maintenance and reduce costs.
	Advanced mobile video technologies to facilitate the collaboration and the sharing information between different productive divisions.	Augmented reality applications to support the operator during the maintenance.
		Quality control system combined with gesture recognition technology
<u>Feasibility level : 1-5 points (1-big gap/5 –thin gap; 2.5 points</u>	<u>Feasibility level : 1-5 points (1-big gap/5 – thin gap; 3 points</u>	<u>Feasibility level : 1-5 points (1-big gap/5 – thin gap; 3.5 points</u>

<p><u>STRENGTHS:</u></p> <p>>Speed that can be achieved through the Industry 4.0 plan</p> <p>>Flexibility of the process and the product introduced by Industry 4.0;</p> <p>>Domain knowledge:specific expertise and knowledge the company has into;</p> <p>>Quality:for associated companies products is the starting point to be competitive.</p> <p>>Quick response/Proximity location machinery production</p>	<p><u>WEAKNESSES</u>:</p> <p>>Long chain supply of vertical fields :from yarn to ready made product till shop selling point;</p> <p>>Training:insufficient academic preparation,a training inside the corporation is needed;</p> <p>>Standards: the lack of a communication in standard that allows the interoperability between different links of vertical supply chain ;</p>
<p><u>OPPORTUNITIES:</u></p> <p>>Trend and driver of the textile industry: fast fashion, low cost;</p> <p>>Financial contribution issued by government programms, EU.</p> <p>>New business marketing models :package of equipments with training and service included;</p> <p>>new industry transformation trend sponsored by the Industry 4.0 concept</p>	<p><u>THREATS:</u></p> <p>>Time:the market demand time is really FAST so the company organization must be revised in order to supply this trend;</p> <p>>Lead time:in order to deliver the product quickly to the client, the companies must face off the needed timing to find the required components from the vendors;</p> <p>>Data security: the hacking is the main issues related to the data acquisition and storage;</p> <p>>Privacy and data propriety: little expertise, also from the legal point of view</p>

Figure 1. S.W.O.T.Analysis Diagram–textile /garmenting industry overall

2.4 Identifying the position of Romanian textile and garments industry-comparison to benchmarks in SWOT diagram

The analysis will be done following the same methods of evaluation of benchmarks with stars (1-big gap,5-thin gap),only the range of criteriae was enlarged to better emphasize the issues which need immediate solutions ,onto table 2.

Table 2.- Benchmarking analysis for textile/garmenting industry in Romania

BENCHMARK CRITERIAE	TEXTILE UNITS – Romania	GARMENTS UNITS-Romania
Investement programs/Facilities offered by government	No available data	No available data
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★
Education institutions specialized on the trade	-No available data about vocational schools(the old ones were closed); -there is 1 University	-Several high school/vocational schools located in central side of country where are the productions units; -2 Universities
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★★★
Training programs	Internal –developed inside the companies	Internal –developed inside the companies
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★ ★
Local companies building equipments (robots, automates)	No available data	Several representative of german & italian equipments producing spare parts & technical support
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★ ★
Local companies profiled on IT for the industry	No available data	2 units (Gemini and Datas)profiled for CAD and software for real time production control
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★★★
Qualified labor force(middle management, tehniciens, engineers)	Limited only in 2-3 units which are still on production.	Medium number in availability with high qualification & versatile skills
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★ ★ ★ ★
Qualified labor force (blue collars operating equipment)	Limited only in 2-3 units which are still on production	Medium number in availability , high qualification & versatile skills
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★ ★ ★ ★
Age of labor force	Around 50 years, aging more as no longer interest /motivation for the profile, due to low payment	Around 40- 50, aging more as no longer interest/motivation for the profile due to low payment
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★ ★
Existing production units investing in future trend of Industry 4.0.	Insignificant ,due to reduced number of production units	Moderate level , due to high prices of equipments and production structure (hectic orders, fast/high fashion)
<u>Feasability level : 1-5 stars*(1-big gap/5 -thin gap)</u>	★	★ ★

The above evaluation ,which contain a personal research of data from own experience and practiceof

the past 30 years, show a not promising image at the first sight, where the textile field was almost perished along the years and garmenting still existing by certain sporadic foreign groups investments which was developing the available labor force and also the know-how and existing expertise of technical skilled „white & blue collars”. Besides the big gap noticed onto the existing textile domain on all the criteriae, the 2-nd big gap is remarked on the investment programs and facilities offered by government which prove once again the comments made in the previous chapter. The garmenting sector which is functioning better than textile will be more efficient by having a strong and complete supply chain at the level of textile /knitting as source of raw materials which fulfill two lean criteria (proximity for reducing the lead time and spare alternatives for versatility of customized fashionable production). Altogether could provide a larger range of production and services for the local community and extending the export trade, enable a larger contribution for national budget. The next diagram(diagram 2) of SWOT analysis focused on Romanian industry of textile/garmenting is aiming to extract the main features which could be solved on short term and most important those element which need long term investment and involvement of all stakeholders (manufacturers, government and schools).

<p><u>STRENGTHS:</u></p> <ul style="list-style-type: none"> >Reliability: fulfil dead lines in front of customers, sometimes taking over the losses determined by delays of previous links of vertical supply chain >Flexibility: achieved from the experiences with multi-products and complexity of products; >Domain knowledge: re-build the services of full garments, which was reduced in 90's decade to CM lohn. >Quality: obtained by working for premium brands with high standards ; >Quick response to clients: offer positive and constructive solutions for clients demands; >Qualified working force for product development (more than 50 % of existing units doing prototypes and sales collections); 		<p><u>WEAKNESSES:</u></p> <ul style="list-style-type: none"> >Long chain supply of vertical fields from yarn to ready-made product till shop selling point; >Missing the link of textile local manufacturer >Training: insufficient vocational schools/academic preparation is needed, besides training inside the corporations; >Aging labor force: difficult to recruit fresh employees for generations turnover; >Work nature with most content of human interaction: 50 % of time value is depending on sewing which is limited to digitalization; >Low value of product: put permanent pressure on cost with small margins for profit
<p><u>OPPORTUNITIES:</u></p> <ul style="list-style-type: none"> >Alternative products request on the market: besides the usual ready garments, technical/medical/army special products could be on demand; >Financial contribution released by EU programmes. >New business marketing models: package of equipments with training and service included; >New industry transformation trend sponsored by the Industry 4.0 concept >IT industry in progress to achieve customized software for product development and production control. 		<p><u>THREATS:</u></p> <ul style="list-style-type: none"> >Market volatility: high sensitivity to events, seasons, fashion trends changes; >Low level of payment for labor force: influenced by the low prices; >Time: the market demand time is really FAST so the company organization must be revised in order to supply this trend; >Lead time: in order to deliver the product quickly to the client, the companies must face off the needed timing to find the required components from the vendors; >Data security: the hacking is the main issues related to the data acquisition and storage; >Privacy and data propriety: little expertise, also from the legal point of view

Figure 2. SWOT analysis for textile/garmenting industry in Romanian

3 Conclusions and actions .

3.1Conclusions

So far all the achieved data and research results bring us to the main conclusion that there is a potential to be developed in thisa trade ,which was emphasized by the strengths items and on the other hand there are quite many obstacles to pass (the weackness items).For the public which is has just few info about this industry domain,this study look not very different than for the rest of productions fields, suffering more or less from the same matters.In such case,probably a clear direction should be a unified and strong Think -Thank group,quoting as well Dorin Banabic,2016,Magazine of science and sciencemeter,proposing an agenda for Industry 4.0 in Romania,involving the team of technical universities, representatives of business groups and exporters ,IT and ofcials which could make lobby to EU Economic Commission in order to get a financial support from the assigned budgets. The main consequence of this approach will be the development of an intelligent manufacturing environment having the capability of communicating and making optimal decisions in an autonomous manner. In order to achieve such an ambitious goal,from the existing info EU could have available more than 1,300 billion EURO in the next 15 years.The major economic and political challenge consists in allowing all industrial domains to take advantage from the digital innovation in products, manufacturing processes and business models.(Dorin Banabic,2016,Magazine of science and sciencemeter).

3.2Potential-actions

A realistic approach in such case is neccesary, in order to see what could be done on short term at the level of manufacturers group and then by a long term at the level of Think-Thank groups and lobby.

3.2.1On-short-term

- manufacturers could make analysis and simmulation plans for production convertible lines(multi products on a versatile line with cellular organization) or short-multi lines (multi products in small lines to generate flexible orders upon request).The opportunity of existing market should be exploited , taking into the possibility of making in parallel smart technical /medical products and value added complexreadywear

This,,immediate”term is assuming a time horizon of 6 months- 1 year,because feasability study and budget must be configured for the projects involving product development, production layout set-up, needed equipment,personnel training and all the aggregate figures related to profit/loss,depreciation rates for the assets ,sources of financing.

3.2.2On-long-term

-a particular proposal could be a pilot project initiated at the level of partnership between Technical University –DIMA(design industrial and management), a cluster of 1-2 manufacturers in the field & equipment constructers, to create a smart factory model with a product development and set-up with digitalizing the planning,decisions and control of processes and as much as possible the manufacturing. As far as I researched,several examples were done before, in matter of initiative for the complete chain of production activities,one of them for Escada group in Slovenia, in 2013-2014 and another in Germany Aachen with Learning Textile factory 2017,in the next proximity of RWTH Aachen campus [4].So far, not so many haven’t have the knowledge , budget and expertise to modernize the complete supply chain either for ready wear or textile .Plenty of examples could be found related to logistic and sales (ware-housing/selling points) or marketing and product development , but having only fragmented activities , this will not be sustainable for the industry for long term.Obviously an assembly approach is needed as previously mentioned but meanwhile costly.That’s why association of multi-professional entities are requested to be involved(manufacturers with practical know-how,university which could provide research means &

documenting data bases and also young enthusiastic students involvment,IT division for connections,infrastructure and maintenance,banks or government institutions for financial support).

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