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Drivers and Barriers to Circular Economy Implementation: An Explorative Study in Pakistan's Textile Industry

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Abstract
Currently, the Circular economy has gained significant attention from practitioners, academia and researchers during the last decade due to its potential environmental and social benefits. However, in the past meager attention was given to finding out the drivers and barriers to CE adoption in emerging economies including Pakistan. Consequently, this research work aims to explore the drivers and barriers to the implementation of CE initiatives in Pakistan's textile sector. The explorative research method was used to identify key drivers and barriers at the micro-level implementation of CE within the textile Industry of Pakistan. The research design for this study includes quantitative methods. The self-administered survey questionnaire was used to gather the data. Study results show that "available technology" (34 per cent), "awareness" (19 percent) and "compliance with regulations and stakeholder pressure" (15 percent) and intellectual capital within the organization (7 percent) are the five top drivers. Likewise, "financial investment" (30 percent), "technical and technological capacity" (24 percent) "national and organizational policies" (17 percent) and "product quality" (16 percent) are the four top obstacles in the operation of CE initiative in textile sector of Pakistan.
The study focuses only on Pakistani textile industries and therefore, proper indications are purely restricted to developing Asian countries. Existing work is the first in its type which has explored the key drivers and barriers in the implementation of CE initiatives at the concern stage within the textile industry in Pakistan. Accordingly, it will help to increase an understanding of the subject matter as well as enable to devise effective business policies by the practitioners for up-scaling CE.
Keywords: Manufacturing, developing states, Barriers, Textile, Drivers, Circular economy

1. Introduction

Throughout the last few decades, human views about the utilization of natural resources and ecosystems have drastically changed. That is one of the major reasons the circular economy has captivated a significant interest from practitioners and researchers, primarily due to its admirable twofold benefits of social and environmental fortification (Jawahir & Bradley, 2016);. A circular economy tends to optimize manufacturing to produce more sustainable products (Govindan & Hasanagic, 2018)(Smol et al., 2015); European Commission, 2015). The Circular Economy is "Thinking beyond the existing Linear economic model i.e. take-make-dispose extractive model of industrialization". The prime focus of circular economy (CE) is to redefine growth, emphasizing positive thorough social advantages. It gradually enhancing economic activity from the utilization of scarce materials and deriving extra out of the unit. Undertaken by a transition to reusable energy factors, the circular model builds economic, natural, and social capital. It is comprised of three rules: design out waste and pollution; keep substances and commodities in use; reinvent natural systems." (Ellen McArthur Foundation). The circular economy aims to intact available resources with a close-loop chain of supply until the end of useful life and make them available for reuse once more(Smol et al., 2015). CE invoke the transmutation of commercial processes through the conventional linear economic model wherein nature-gifted availabilities, commonly known as raw materials, are transformed into finished goods through process of production by generating waste leading to environmental degeneration., whereas in circular system spoil ended in the natural resources are restored. This system guaranteed a slight waste creation during the production process and product life-cycle in improved and sustainable resource usage.
The notion of Circular Economy and its execution are essential for business operation and economies in order to reduce the waste effectively and efficiently. The emerging nation can potentially avail a lot of benefits from circular Economy by devising appropriate policy as well as its implementation. Circular Economy creates numerous opportunities in various sectors of the Economy like plastic, smart phone, steel, and food supply chain. For example many end-of-life products likewise clothes and electronics disposed of advanced states taken up in these under developing countries for usage and reshaping. (Amoyaw-Osei et al.,2011). Therefore, emerging nations must work hard to devise a well-built approach to revamp and recycle these imported items. It will decline the import bill for economic, mitigate environmental pollution due to commodity reusing, safeguard the environment during "non-socio friendly" actions, and give cheaper redesigned objects to inhabitants (Social). CE is a well framed way, which entails proficient execution. Present available studies have discovered the following tabulated drivers on CE.
After deep survey of existing literature, it has been observed that Intellectual Capital which is a key pillar and backbone for the implementation of such new idea has rare been examined. Recently, a lot of practitioners and researchers have acknowledged a number of barriers for the implementation of this novel idea which are tabulated below:
The idea of intellectual capital emerged first time in literature in the year1969 stoned with the efforts of John Kenneth Galbraith in a letter to Michael Kalecki. ,but this concept got popularity in the era of Tom Stewart in 1991, at which time Fortune Magazine issued his article "Brainpower: How intellectual capital is becoming Americas' most valuable asset" (Bontis, 1998). With time various definitions of intellectual capital have arisen in the literature.
This concept has also been defined as a destination among the organization's status and the value of replacement of its assets. (Stewart, 1997)argued that intellectual capital as the sum up provisions of the combined thought, data, advancements, intellectual wealth rights, efficiency, organization know-how and ability, group interaction systems, public relations, and models that are likely to generate goodwill for a firm. Without proper intellectual capital engagement, the implementation of CE at the micro-level target rarely can be achieved.

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Table 1

Year	Study conducted by	Barriers													
		Lack of Financial Resources	Lack of EC measuring tools and tackles	Highest cost/ Technological barrier	Lack of awareness /Cultural Barriers	Uncertainty	Lack of consumer demand	*lack of market mechanism for recovery*	*Lack of clear incentives*	Complex as well as unclear regulation	Lack of support from Govt. level	Lack of CE know-how of political decision-makers	lack of skilled workforce	Poor resource/ infrastructure quality
2006	Studer et al									□	□	□		
2010	Sarkis et al									-	-	-	□	
	Xue et al	□	□		□	□	□	□	□	□	□	□		□
2011	Radamaekers et al		-		□	□	□	□	□	□	□	□		
	Bechtel et al	□	□		□	□	□	□	□	□	□	□		
2014	Gumley	□	□			-	-			□	□	□		
	Liu and Bai	-	-		□	□	□	□	□					
2015	Planing	-		-										
	Rizos et al	□	□	-		-								
2016	Jabour and Jabour	-	-	-		-							□	
	Erol et al	-	-	-		-							□	
	Ilic and Nicolic	□	□	-		-	-			□	□	□		
	Waibel et al	-	-	-		-	-			-	-	-	□	
	Muller and voiget	-	-	-		-	-			-	-	-	□	
2017	Kiel et al	-	-	-		-	-			-	-	-	□	
	Geng et al	-	-	-		-	-			-	-	-	-	□
	Sharma et al	-	-	-		-	-			-	-	-	-	□
	Adams et al			-	□	□	□	□	□					
	Jesus and				□	-	-	-	-					
	Batista et al				-	-	-	-	-					□
2018	Kirchherr et al				□	-	-	-	-					-
	Ranta et al.				-	-	-	-	-		□			-
	Mendonça,	□			□						□			
2019	Ghudimi et al	-			-						-			□
	Tura et al			□							□			
2020	Kumar al el	□												

Besides intellectual capital, the foundation of the organization system is followed by an organizational culture which shares the base values (Saffold III, 1988), forms principles for management and employees followed(Barney, 1986) (Schein, 1992), as well as states the way how an organization can conduct the business activities. By revising its effect on innovation, i.e. circular Economy, (Martinez-Sanchez et al., 2016)discussed that organizational culture seems to be a critical factor in any organization's success, lying at the heart of organizational innovation (Tushman & Smith, 2002). The notion of circular economy CE and its strengthening compensation was discovered very little, especially in the context of LDCs. These countries have paid very diminutive attention to exploring the drivers and barriers of implementing a circular Economy in the context of advanced economies alongside China. Consequently, there is much more need for research focusing on developing and emerging economies. This acts as the impetus of the present study to dig out the drivers and barriers in implementing the concept of CE with a stress upon the Pakistani textile manufacturing industry. The existing research study is inspired considering that Pakistan is listed as an emerging Economy and several components of the economy contribute to the country's GDP. The textile production unit comprises six industries spinning, waving, dying and printing. There are 423 largest textile units in Pakistan. The textile sector of Pakistan is the 8th largest exporter alone and has a 70% overall export share in the country. This sector contributes an 8.5% share of the GDP growth rate and provides a 45% share in total employment of the workforce. The importance of the textile sector in the Economy of Pakistan can be viewed from the table given below:

Table 2

Year	Total export in US$ (Million)	Textile Exports in US$ (Million)	Share in total export
2000	9940	5577	56%
2001	10600	6661	63%
2002	11010	7018	64%
2003	13920	8521	61%
2004	15350	9151	60%
2005	17180	10691	62%
2006	19400	11376	59%
2007	20140	11177	55%
2008	21060	11092	53%
2009	20840	9867	47%
2010	23950	11778	49%
2011	29830	13631	46%
2012	27820	12919	47%
2013	30700	13890	45%
2014	29920	14068	47%
2015	28690	13470	47%
2016	25480	12450	49%
2017	25150	13553	54%
2018	28220	10880	39%
2019	28150	11700	42%
2020	22505	12783	57%

Source: (Economy of Pakistan)

This indicates that the textile sector has positive growth in the industrial sector; however, there is still a misalliance in the enhancement of the operational distinction, especially for technical expansion, sectorial performance, and modernization in sustainability (Khan et al., 2018). A sole remedy for resolving these incorporating deficiencies is introducing the CE concept with its operation. However, this industrial sector has inadequate knowledge about Circular Economics and is still trying to cope with their incorporation. Moreover, the available resources provide only inadequate knowledge about circular economy practices and their principles, particularly in emerging economies. Consecutively to deal with this point in the thought and help in the exercise, this exploratory work looks into the motivators that encourage the operation of CE in the Pakistan textile sector and the hindrances that block the implementation of CE in the Pakistan Textile industry.

In doing so research contributes to the literature in the mentioned ways, First, this study identifies the most appropriate drivers and pressing barriers in the implementation of CE in the Pakistani textile sector. Those uncovered drivers and barriers will give a helping boost to textile concern stakeholders and executives in Pakistan to devise strategies and policies to deal with existing challenges that hinder in implementation of CE. These unearthed drivers and barriers will help to promote and make possible the result-oriented adoption and transform the traditional enterprise system into the most sustainable CE system. Such versatile goal-oriented work will provide a profound base for potential in upcoming research, particularly studies conducted on emerging economy angles. Overall, existing research work offers a distinctive research gap to reflect insight into the Circular Economy from a less enlightened growing state like Pakistan.

The rest of this work is structured as mentioned. Para 2 will address the pertinent reference concerned with CE along with the research technique that encompasses the research format, sampling tools, and ways for doing the survey. The information analysis is given in section 3. Section 4 evaluates statements ending with the result and more research proceedings in section 5.

Recently, a lot of practitioners and researchers have acknowledged several obstacles (see e.g. (Bicket et al., 2014); Van Eijk, 2015; (Shahbazi et al., 2016); (Mont et al., 2017); (Pheifer, 2017); (De Jesus & Mendonça, 2018); (Ranta et al., 2018) to the implementation of the circular economy. Conversely, to conquer such unearthed barriers and to bring into work circular economy effectively, several drivers have been identified and highlighted (Park et A., 2010); (Zhu et al., 2010); (Smol et al., 2015); (Lieder & Rashid, 2016); (Hazen et al., 2017); (Mont et al., 2017); (Govindan & Hasanagic, 2018)As aforesaid, it is documented in current circular economy literature to several efforts were made to identify the barriers, drivers for the growth of CE framework. Circular Economy is a structured approach that entails proficient execution. Present available studies have discovered the following tabulated drivers on CE.

2. Literature Review

2.1. CE in emerging economies

Ellen Mac Arther Foundation (2013) states that "The Circular Economy concept is an emerging field of study which promotes a systemic, cross-disciplinary approach." According to an industrial economic system, a circular economy emphasises regenerating and restoring natural resources with the notion of making and protecting the natural resources from maximum utilization and extracting further possible costs forever. (Bernon et al., 2018); (Yang et al., 2018).

This system has the potency to formulate sluggish industries with less greenhouse outgoing concerns (Geng, Sarkis, et al., 2013). In contrast, the development of scientific knowledge on CE has predominately based on the political as well as economic geographies of developed nations and China, it is estimated that CE has an opportunity for developing countries to modify their waste management system and try significant work in economic supply chain for proper material utilization (IC, 2015). In this era, the idea of CE emerged with new political and economic geographies. The African countries, especially Nigeria, South Africa and Rwanda, are nearly working in collaboration with the European Union's World Economic Forum through the establishment of African Alliance on CE (Kilian, 2017); Circular Economic Club, 2017; Department of Environmental Affairs Republic of South Africa, 2017). As well as, multilateral development banks are exploring the potential of CE in Columbia and Turkey as well (*Rosca, 2015),*

Circular Economy is a latest concept of regeneration and coordination among natural ecosystems, business, our routine living and waste management. Proper waste management system and circular Economy are necessary for emerging states in order to reduce a rapid waste generation crisis for better and friendly environment with health outcomes. According to Mayropoulos, the worldwide indicators estimated that waste dumps attribute around 8-10% of greenhouse gas emanation in 2025(Mavropoulos & Newman, 2015). In fact, a CE is idea based that there is nothing to be taken as waste.

Moreover, worldwide supply chain has been taken in general to firms and other concerns to make an effort for lower impact on greenhouse gas emission of their supply chain across the globe (Agyemang et al., 2019). It has also been mandatory for enterprises to keep a continuous and circular use of material to minimize greenhouse gas emission and linked pollution by restoring material, energy and water as much as possible by the life cycle of object is extended.

Unfortunately, a lot of emerging economies have not been given great attention in approaching CE operation and availing positive outcomes of rotation. Even though, the main concept of CE and its benefits were sketched decades ago, but the acknowledgment of idea was not so fast. Recently, the concept has gained momentum indifferent sectors such as business, politics and academic. Yet, emerging economies like Pakistan, India and Ghana demonstrate the potential of CE by the importing useless electronic commodities from technologically advanced economies for reuse and recycling (Amoyaw-Osei et al., 2011). It reflects the core value of CE in with reference of environmental, social aspects and economics (Winans et al., 2017). In terms of cost, if developed economies take CE approach as a chance, it may minimize the cost of imports and reduce waste. The systematic strategies of rules and regulation mechanisms compelled by governments is necessary to do that(Gurtoo & Antony, 2007).

The state and law enforcement bodies could offer incentives and some relaxation to concerns that to adopt CE steps in terms of tax rebates(Jakhar et al., 2019). In addition, some others researchers argues that state and concerned authorities should grow infrastructure and generate awareness among customers and to value the importance of CE.

2.1.1. Drivers for CE in the reference of advanced states

CE has an imperative part in emerging state's groom and development as well as necessary to understand and identify the drivers of CE (Govindan & Hasanagic, 2018). For the grounds which attracts the investors to participate in CE implementation like "limitedness of availabilities," "atmospheric deterioration"; "favorable trade chances," "coordinating procedures," "customer reliance," "cooperation with customers" and "better firm performance" (Geng, Sarkis, et al., 2013);(Zhu et al., 2010); (Govindan & Hasanagic, 2018); (Abubakar, 2018); (Gaur & Mani, 2018). Drivers that stimulate the implementation of CE steps may further be classified into two groups namely inside and outside (Govindan & Hasanagic, 2018). A lot of research has pointed those which introduce the different drivers in different sectors like construction (Smol et al., 2015), manufacturing (Lieder & Rashid, 2016)and service (Tukker & Jansen, 2006).

According to (Ilić & Nikolić, 2016), CE drivers may be categorised among 04 major classes that are "fundamental motivators," "common hygiene," "resource management" and "economic-financial position" in Serbia such factors are used as a source to achieve sustainability aims in different municipalities. Likely, (Wilson, 2007)suggest six main categories of drivers to the improvement of dispose of, including "public health," "environmental safety," "weather change," "the core cost of waste," "organizational and workload matters" and "general know how." In the study of (Mont et al., 2017), firms are inside motivated to adopt CE for availing new gain. They established five main internal drivers which are "economic," "environmental advantages," "maximum protection of provision and reliance," "modern and motivated customer connections" and "company values, policies and influences." Besides, explaining that two major external drivers "coercive pressure" and "market pressure" are necessary for achieving the benefits of CE. Many other researchers explore different drivers of CE such as "cost savings in manufacturing" (Stahel & MacArthur, 2019); (Walsh, 2010), "diversified and customized offering," "Increased brand protection and loyalty" (Stahel & MacArthur, 2019), "revenue growth from recovering waste" and "increasing competition from low-cost countries" (Mont et al., 2017). The study of (Govindan & Hasanagic, 2018) derives CE drivers that can be classified in to five different clusters includes "policy and economy" (Park et al., 2010); Li and Li, 2011; (Ilić & Nikolić, 2016); (Hazen et al., 2017); (Quina et al., 2017) which includes drivers like laws with reference to commodity return and economy regain, "hygeine" (Ilić & Nikolić, 2016); (Pringle et al., 2016) including increased animal and general health, "environmental safety" (Ilić & Nikolić, 2016); (Pringle et al., 2016); (Hazen et al., 2017); (Quina et al., 2017); (Clark & Watson, 2016)involving atmospheric alteration, property of nature production and the safety of recyclable means (Yuan et al., 2006; (Ilić & Nikolić, 2016); (Pringle et al., 2016), "society" along with population enhancement, urbanization, employment generating strength, consumer know how and "product growth" (Su et al., 2013) that is very crucial to enhance the ability of means, power consumption and boost up the value of commodities.

2.1.2. Barriers for CE in the reference of grooming economies

For the previous couple of decades, research relating to CE has achieved major importance among practitioners, firms and education (Lieder & Rashid, 2016). The previous studies have introduced, and explored its outcomes in connection to barriers of Circular Economy and also established a framework of CE regarding its barriers (see e.g. (Vanner et al., 2014); (Van Eijk, 2015);(Shahbazi et al., 2016); (De Jesus & Mendonça, 2018, 2018; Mont et al., 2017; Pheifer, 2017; Ranta et al., 2018); (Kirchherr et al., 2018). They differentiate between "hard" and "soft" barriers which preclude the accomplishment of CE (Kirchherr et al., 2018). Likewise, (Zhu et al., 2010) discuss the barriers to increased supply chain exercises in Chinese entrepreneurs. (Ormazabal

et al., 2018)also discussed the opportunities and challenges of CE in Spanish SMEs. Furthermore, (Prieto-Sandoval et al., 2018)focus on the connection between eco-invention and the pragmatic perspective of the CE framework. (Galvão et al., 2018) joint Biblio metric network and content evaluation to know the basic barriers to CE involving technological, policy and implementation, financial and economics, managerial, output signs, customers and social. According to (Govindan & Hasanagic, 2018)CE barriers are classified into eight separate cedars "economic problem," "governmental issue," "management issues," "technology issue," " cultural & social issue," "knowledge issue," "market issue," and "CE framework issue". (Pheifer, 2017) pointed out barriers of CE with "financing of circular business propositions," "lack of data," "no idea of urgency and firm culture," "current linear system in place" and "present governmental ordinances and governing." (Mont et al., 2017) also established some barriers of CE like, "lack of consumer awareness," "hard to mix with other firms," "high upfront investment costs" "hard to mangle with other concerns," and "commodities are not modifying for operating business models." (Kirchherr et al., 2018)classified into four categories of barriers regarding prevailing, market, culture, and advancement.

Likewise, (Van Eijk, 2015) discussed the main barriers of CE in the India context i.e. "governmental steps to help the micro economy" and "revolving is not properly managed in renovation strategies." Further barriers of CE concerned with business models are "toughness to minimize legal challenges"(Prendeville et al., 2017), "less market of fresh products due to more demand of repaired, reconditioned and renovated commodities." (Stahel & MacArthur, 2019), "shortage of supply (or standard) of returned commodities or means and not easy to maintain take back heavy objects." (Kissling et al., 2013), "unsurities about the scrap cost of the potential products"(Mont et al., 2017), "unpredictability of quantity scrap commodities making it very risky for companies to assume the financial prediction" (Linder & Williander, 2017)and "dangers with product performance, and marginal obligations for reorganized objects or materials" (Mont et al., 2017).

The literature shows that some other barriers were categorized and discussed with the market covering "present infrastructure does not support circular availabilities such as limited scheme work" (Mont et al., 2017); and "shortfall of design tools for spreading business models and for circular products" (Bakker & Costa, 2014); barriers to value chain aspects: "current supply chain reliance and connections prevent regularity" (Boons & Lüdeke-Freund, 2013), "OEMs may endanger destroying relationships with potential retailers and stock holders by providing maintenance or reshaping" (Prendeville et al., 2017) and "component producers and other non-OEMs may have restricted or vague chances to cope with circular business maps for the position in the cost chain" (Mont et al., 2017); barriers related to money, coercive, customer oriented, business policies and skills, and natural problems are enlisted (Mont et al., 2017), related to that (Van Eijk, 2015) distributed barriers in terms of lever which are "common framework," "model and output," "use," "reuse and restoring," and "logistics."

2.2. Research highlights and gaps

A lot of studies have introduced the CE drivers and barriers with specific allusion to emerging economies like China (Geng, Sarkis, et al., 2013), Bangladesh (Moktadir et al., 2018)and(Paul et al., 2018)and India (Ellen MacArthur Foundation, 2015), but rare study relating to Pakistan is available in the existing literature.

Furthermore, numerous research have recognized the imperative of exploration on small stage CE implementation to facilitate managers with comprehension for pointing barriers that challenge implementation and drivers in the passing of enterprises to CE (Govindan & Hasanagic, 2018); (Luthra & Mangla, 2018).

Besides of these literature gaps, many more works are focused on the common producing portion with ignorance of home garments industries of the textile sector. Hence, there are few studies have pointed out the drivers and barriers of CE at the micro level in the home garments industries, and textile sector in Pakistan. Despite these, the current study helps to cope with CE and makes possible the design of efficient strategies and effective policies by decision makers and managers to uplift and sustainability of the CE.

3. Methodology

The methodology part represents the overall research design applied as well as the sampling techniques and samples used in this study. This part also provides details about the research method applied that is suitable for survey-based data analysis besides discussion and interpretation of results.

3.1. Research design and sampling

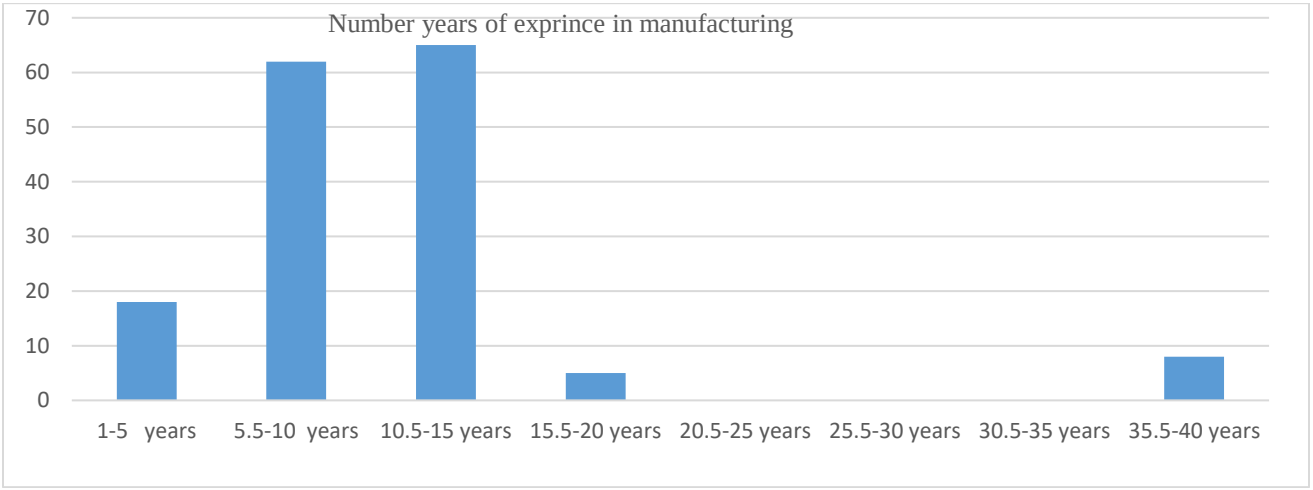
To get an in-depth understanding of drivers and barriers at the smaller-level application of the home-based garment industry in Pakistan, an exploratory research study was conducted. This study approach has the potential to give first insight into the case under study (Forza, 2002); Lee and Kim, 2009). The study applied a mixed method approach having both characteristics of qualitative and quantitative with self-administered questionnaire research as well as interviewing for data collection. We gathered data from both sources (from a questionnaire survey and interviews) for the prospectus of triangulation and to improve the validity of our results and allow better inferences of our findings (Yin, 2003). The people were carefully chosen to fill out the designed questionnaire which was based upon three sampling skills homogeneity, purposiveness and pre-choice (Miles & Huberman, 1994); Kusi-Sarpong et al., 2016). As for homogeneity, our focus was on firms, that engaged to achieve sustainability through a circular Economy. Regarding purposive, our focus was on nominated executives (representatives of our selected firms) who were directly associated with matters allied with the circular Economy especially considered edifying and conversant about the subject matter. For the questionnaire we applied self-selection to provide liberty to selected executive either to participate directly or otherwise, confirming again their willingness and commitment to participate in this study. The study questionnaire was maintained having two parts: The CE drivers for adoption at the micro-level and barriers considered as obstacles in the application of CE in the organization. The result of the filled questionnaire was only 102 data sets received back from the Pakistani home-based garment industry which were intended to attain overall sustainability over a circular Economy. The succeeding figure reflects the designated list of firms (represented by representative executives) engaged in this study.

The result of the filled questionnaire was only 102 data sets received back from the Pakistani home-based garment industry which were intended to attain overall sustainability over circular Economy. The succeeding figure reflects the designated list of firms

(represented by representative executives) engaged in this study. Only 50 Pakistan respondent companies show ample variation in their response conducted for the study on CE based on sustainability principles. The companies selected for the survey vary in various terms and business types such as spinning, waving, printing and dying and their respondent managers' homogeneity (e.g. head of production, duty manager logistics, business growth manager, etc.) We applied an Excel sheet to analyze our survey data.

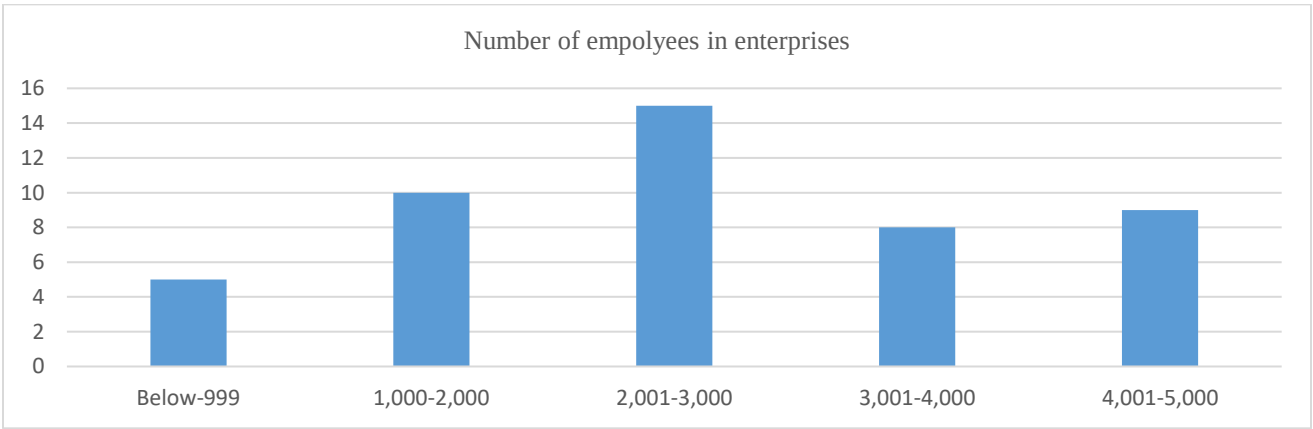
4. Survey results, outcomes and analysis

We express in this part that the outcomes obtained from data and subsequent analysis are discussed with literature reference as well as our research objectives. First of all, we explained the basic demographic and later explained the pure research questions.
The characteristics of collected data demonstrate that survey respondents were mostly experienced management professionals: 65% of respondents have work experience ranging between 10.5 and 10. 15 years, 60% have 1 to 5 years of working experience, 5% of the respondents have experience ranging from 15.5 to 20 years and the remaining 10% have experience of 35.5 to 40 years. The survey results depict younger generation of management executives are more curious about engaging the novel idea of CE as compared to the old one. Figure 1 reflects this information.



(Source: Author own contribution 2021)

The figure-2 represents that mostly survey respondent are from those enterprise that have manpower of ranging from 2001 t0 3000 in their enterprise and others i.e. 10% firms reflect their manpower head count between 1000 to 2000 likewise 8.5% firms shows manpower headcount between 4001 to 5000, 8% firms shows that they hold manpower ranging 3001 to 4000, only 4.5% firms show that they hold less than 1000 manpower headcount. Therefore, it's clear that most of the respondent come from large scale enterprise. Besides, mostly firms had both domestic and country-wide operations. Even few firms had worldwide operations. Figure-2 reflects this information.



(Source: Author own contribution 2021)

4.1. Drivers that enable the implementation of micro-level CE

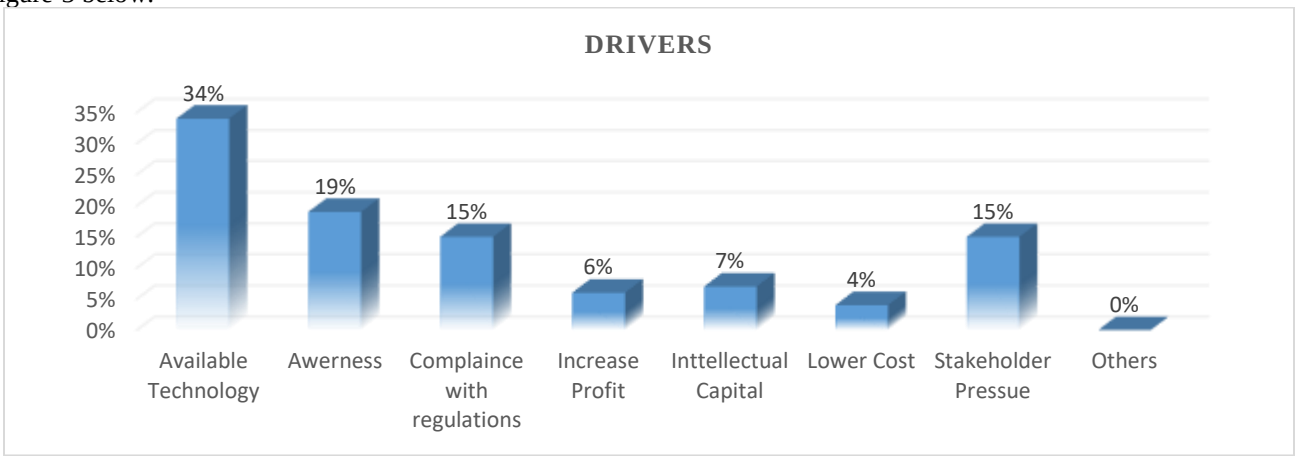
Key drivers as noted in this discovery nature of study for the implementation of CE at a small-level are displayed in Figure 3. The outcome of our survey analysis was further categorized into two parts i.e. external and internal drivers as evident from (Mont et al., 2017). Discussion on the survey findings is given in the succeeding sections. Moreover, findings were further compared with existing literature on the subject which demonstrates how our empirical result narrates with the available literature.
Figure 4 recommends that the majority of the organizations would like to introduce and implement circular economy initiatives in pursuit of available technology. Latest technology assists organizations to avail competitive advantage from emerging market scenarios as well as from digital change, the swift propagation of novel technologies has aided many organizations to identify today and prospects in circular economy ingenuities (CEPS, 2018; de Sousa Jabbour, Foropon and GodinhoFilho, 2018; (Bai et al., 2017). Latest technologies like as communication technology, internet technology, and data analysis technology build the conditions under which circular economy novelties like efficient liquid and solid waste collection systems, search for fresh

markets for remanufacturing of consumed material for CE to be implemented on widespread operation (Moktadir et al., 2018). From total of 34% of respondents perceived that available technology of modern technology can play a vital role in transactions towards the implementation of CE in the textile industry of Pakistan.

Awareness of internal management professionals as well as staff of the organization plays a vital role in transactions towards the implementation of CE principles within the organization. The respondents of our survey had clear and fair concepts about the application of sustainability and expressed their knowledge of the need to ensure sustainability within the setup of their organization. The available literature expresses the worth of awareness about CE for the promotion and implementation of its principle (Ilić & Nikolić, 2016); (Xue et al., 2010). However, nineteen per cent of our respondents seemed unaware that unawareness of CE could not give a clear-cut comprehension in motivating drivers about this novel idea in their organization. However, they showed their interest in obtaining more insight into CE principles and practices to how this new idea can be implemented in the interest of their organization.

Compliance with Regulations. Existing literature expresses that organizations and national regulations are very helpful in the provision of the basic framework, and avenues as well as expedient to the enterprises for transitioning from a traditional linear economic model to the most sustainable circular economic model (Govindan & Hasanagic, 2018). The concerned authorities and Government can devise policies, offer incentives such as tax holidays for the promotion of CE and enforce laws which are helpful in the implementation of CE principles and practices. Moreover, the Government can offer the organizations to avail of credits and diversify their investment mechanism towards the implementation of CE (Jakhar et al., 2019). Furthermore, law and enforcement authorities can initiate effective regulation as well as offer incentives/rewards and accountability for the implementation of CE. From our survey, fifteen per cent (15%) of respondent express their opinion that the main goal of an organization is profit-making, without proper enactment of regulations towards the transaction on CE in the textile industry; most organizations would not be motivated to implement CE in their organizations.

Stakeholder pressure. Persistent pressure for the implementation of CE imitative within the organization from the stakeholders' side can play an imperative role. Existing literature on CE depicts that during the last decade, an increase in public opinion remains in demand for organizations to embrace more responsible procedures of production as well as consumption (Fonseca et al., 2018). During the survey respondents ranked this as the fourth most important driver for transactions towards the adoption of CE with fifteen per cent (15%) weightage. Our survey respondent opined that stress on the changing behaviour of textile product consumers and customers as well as the society in common taking a keen interest in the CE initiatives. Survey results are shown in the figure-3 below:



(Source: Author own contribution-2021)

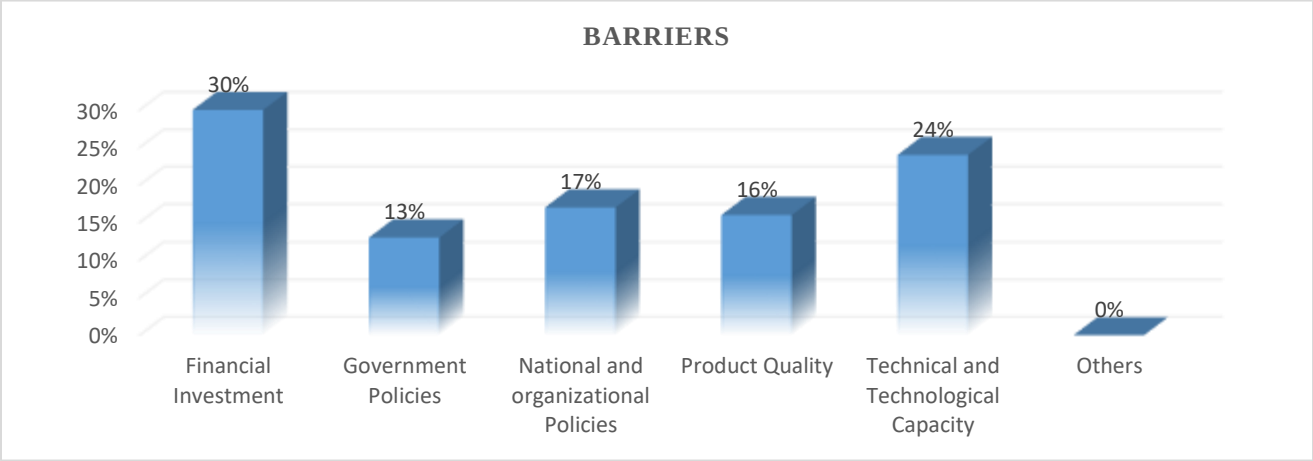
Intellectual Capital: Intellectual capital (IC) is in the form of intangible assets which any firm holds in their human resource or the firm has access to (Edvinsson and Malone, 1997). In the presence or holding of IC within the organization the firm builds strong intangibles that provide the firm opportunities to improve its performance (Mention & Bontis, 2013), availing competitive advantage (Chahal & Bakshi, 2015)and innovating (Wu et al., 2007); Leitner, 2011). Hence, the IC plays an important role in the creation of new inventions as well as helps the management in the implementation of novel technologies such as CE. The IC is a new driver which has rarely been studied before this research work. Our survey results show that the respondent weighs this driver as the fifth worthy driver in transactions towards CE with a seven per cent weightage.

Increase profit: Figure 3 reflects that most organizations would like to implement this concept in the best interest of shareholders, increase market share, and benefits, and in chase new or higher profits as well as improve its overall sales and competitiveness. This concept is highly represented in the literature as the key idea for CE practices. But now as time passes the perception and expectations of society are changing they expect the organization to do something for the betterment of society as well as for the environment. Now due to society, organizations are forced to change their production pattern from profit-making to ecofriendly production pattern. Therefore, our survey results show that respondents weigh this driver as second least with only six per cent weightage in the overall survey pool results.

Lower cost: Survey results show that only four per cent (4%) respondents recommend lower cost as a driver of CE adoption in the textile sector of Pakistan. The oldest linear business model builds on extraction of raw material, processing and lastly disposal at the end of life. It is very hard and expensive to maintain the business process as the prices of raw materials escalating globally day by day moreover energy and resources also represent the vital competitive factor. The study (MacArthur, 2013)recommends the CE as the most prominent cost-saving factor in the Textile Sector.

4.2. Barriers that hinder the implementation of micro-level Circular Economy

Through the survey, the identified and perceived barriers to the adoption of circular economy practices at the micro-level are reflected in Figure 4 below. As explained the drivers in the succeeding paragraph, the findings barriers as mentioned in the study of (Mont et al., 2017).



(Source: Author own contribution 2021)

Financial Investment: Earlier available literature highlights the substantial role and financial investment restraint that obstructs the adoption of circular economy practices (Kirchherr et al., 2018). The survey respondent opined that in the primary stage of CE, adaptation, the organizations expect their initial investment to be higher. Our survey results depict that survey respondents rank this barrier at the top, securing over thirty percent (30%) weightage.

Technical and Technological Capacity: The ineffective or obsolete technical and technology capacity of the organization and its inability to have potential avenues to adopt CE practice within the enterprise rank second among the perceived barriers with twenty-four per cent (24%). The new concept of circular economy is purely technological-centered. Therefore, technology is a prerequisite in the adoption of CE practices within the enterprise (Vanner et al., 2014); (Pheifer, 2017); (de Sousa Jabbour et al., 2018). The low-grade technology or ineffective technology in the textile industry hinders the adoption of CE practices. Potentials like applying digital manufacturing technologies can assist the firms in optimizing their production process in circular economy implementation (Jabbour et al., 2019). The available technology is now enabling the organization to get real-time data which can increase the option for planning in the upcoming maintenance schedule. Presently, despite health hazards and degradation of environmental risk, most firms use low-grade technology and inexpert staff in the collection of returned material within the organization.

National and Organizational Culture: Innovation, inclusive of both instigation and execution (e.g.,Nakata&Sivakumar, 1996); (Rank et al., 2004); (Shane, 1995). Several authors opine that human dynamics, as well as the national culture, perform a vital role in the process of innovation (e.g.,(Frederick & Chittock, 2006); (Hofstede, 2001); (Shane, 1995), while Rank, Pace, and(Frese et al., 2004)and Pohlmann (2005) argue that innovation and creativity are culturally alleviated retorts to the environment. Like national culture, the organization's culture also plays an important role in the adoption of innovation. According to (Loewe & Dominiquini, 2006), organizational culture as well as values are one of four important factors – besides the management processes, people and skills and the leadership behaviours, – strategic parts for effective adoption of new innovation. Despite of such importance, this barrier has rarely been studied. Our survey respondents rank it in top third key barrier with seventeen percent (17%) in overall weightage.

Product Quality: Despite the fact product quality is specified in the list of drivers for adoption of CE, it may also impede execution (Yang et al., 2018) from a survey it gets sixteen percent (16%) weightage from the viewpoint of respondents.

Government Policies: Our survey results are similar to those established in the existing literature. The existing literature holds that Govt. policies are significant barriers to the implementation of CE initiatives ((Luthra & Mangla, 2018). Government policies for promoting CE include unstable political conditions, tax holidays and other short-term as well as long-term policies for the business community. Our survey respondents perceived this barrier and weight as least which hinder in implementation of CE practices within the organization.

5. Conclusion, Discussion and managerial implications

Owing to the significance of circular economy, a lot of governmental strategies as well as organizational level assurances were obtained before introducing the idea of circular economy specifically in the European Union, Japan, China and many more advanced countries and regions (Winans et al., 2017). Conversely, several organizations in developing economies attentive to executing CE initiatives at micro-level such as eco-design design, cleaner production, recycling the product, reuse or remanufacturing within their organizations are at the primary levels of CE agenda also entail well-structured business approaches to stand in an effective transition towards the circular economy. These circular economy initiatives retained the potential to progress to rethink, reduce, reuse as well as reverse supply chains or remanufacture end-of-life goods(Nasir et al., 2017).

The existing study explored tentative drivers and barriers in circular economy execution on sizeable enterprises within the Pakistani textile industry by adopting an explorative study approach with the help of a self-administered survey questionnaire. This study categorizes and offers the base for understanding the most relevant drivers and barriers to the implementation of a circular economy within the Pakistani textile industry that can provide a foundation for devising effective management policies and strategies transitioning from a linear economic model to circular systems. Amid the vital drivers as identified by this study, it

reflects that key executives are highly motivated by the potential of a circular economy in enhancing the profits, the product market share, benefits to stakeholders and the potential for the organizations to reduce the cost.

This fallout is mostly in accord with the available literature. As a precedent, studies which have examined barriers to the implementation of CE within the same industries have also recognized cost saving as the main driver of CE within the manufacturing industry (Stahel & MacArthur, 2019); (Walsh, 2010). Similarly, organizations concerned with the environment which is a key part of their organizations' business values, intend to design for the environment, lean manufacturing and resource efficiency emphases on delivering sustainable business development, inspires many executives of the institution to cogitate in transition in CE initiatives. On the other side, because several executives are not well aware or well know about the notion of circular economy and the investment required to implement it, various organizations face hindrances to introducing CE principles. (Franklin-Johnson et al., 2016) opined that the CE idea has succeeded in attaining considerable political as well as institutional attention globally, now it depends on organization and individual executives to realize this dream truth. Therefore, the circular economy is positive at the start as the people who hypothetically take the lead have little to no knowledge about this idea. This elucidation is in sync with the result of the lack of expertise, the ineffective role of top management, paucity in a technological and technical capacity, lack of intellectual executive, and dearth of resources are considered significant barriers which are obstacles in implementing the CE initiatives within the institutions. It is not astonishing that leadership quality as well as the intellectual capacity of the top executive is considered a key to any institutional change similarly unawareness and organizational culture of key executives about the circular economy would potentially lead to reluctance to implement circular economy initiatives (Geng, Zhao, et al., 2013).

The results of this study recommend that many drivers and barriers concerning with the implementation of CE initiatives at the micro-level come from internal instead of external elements. So, it's a key responsibility of the institution to overthrow these deterrents of circular economy practices, its organization dire to ruminate internal elements which limit their prospective to implement CE. The single imperative drive in realizing this dream is to align circular economy initiatives into the institution's vision, mission, strategy, and goals as well as key performance indicators (KPI) that will invite the organization personnel training and development (Kirchherr et al., 2018). (Govindan & Hasanagic, 2018)while conducting a systematic review in their study claimed that politically-related standpoints or elements have significant positive effects or play a key role in the implementation of CE. Conceivably, the resilient emphasis of external crucial elements in the implementation of circular economy is related to the domain of existing micro-level with the inclusion of supply chain literature on CE in the context of China from 2009 which is highly reinforced by the legislature as well as centrally devised strategies to transit CE initiatives (Geng, Zhao, et al., 2013)(Abubakar, 2018). Though a similar research study was conducted in Bangladesh on leather industries (Moktadir et al., 2018), Pakistani textile industries tend to prioritize Internal elements for the implementation of CE initiatives. A future research study can identify the more internal and external drivers and barriers having significance in the context of emerging economies.

Besides, linked with priory identified barriers in former studies on the subject (see e.g. (Mont et al., 2017), it is stimulating that organizational culture is an enormously pertinent barrier to the implementation of CE initiatives in the textile industry. Further study can discover why organizational culture tends to be the utmost joint barrier in the implementation of CE in the textile industry. The awareness campaign can be lodged to change the mind of the organizational personnel which will change the organizational culture. Finally, the existing study limited its focus to large-scale textile organizations; future studies can be conducted by focusing on the drivers and barriers in small and medium enterprises (SMEs).

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