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What motivators and inhibitors to co-creation are deemed important for tailored co-creators? Study of consumer characteristics on co-creation for three different products

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Third, "www.anjammidam.com" shared all the surveys to its users by mass email communication.

Concluding to this part, I am thankful to all anonymous friends and people who participated in our surveys and helped us to reach our goal.

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ABSTRACT (IN ENGLISH)

Co-creation with consumers is increasingly attracting the interest of researchers and practitioners nowadays. However, there is still lack of research on the impact of industry context on co-creation activities design and effectiveness and on the typology of consumers more willingness to participate. In this thesis, we outline the differences between users' preferred co-creation tools, motivators and inhibitors to co-creation for different consumer typologies, by examining co-creation for three different products: MP3 player, Fitness tracker and 3D Printing. Our results demonstrate that learning benefits have positive impact on joining co-creation for the tailored co-creators and ordinary users; however its extent is different between these groups of consumers. Furthermore, we observed that market mavens and consumers high in emergent nature are the only co-creator segment who can be stimulated to join co-creation activities by all the motivations utilized in our study. The most important finding of this thesis is the inhibitors effects on co-creators. While lead users and innovators tend to not be influenced on risk of discredit and energy inhibitors for joining co-creation, ordinary users are prone to get demotivated joining co-creation when these inhibitors arise. We believe that the results presented in this research can help marketing managers to design better co-creation activities which would be easier embraced by consumers.

Keywords:

Co-creation, Motivations, Inhibitors, Co-creation tools, Personality trait

ABSTRACT (IN ITALIAN)

La co-creazione con i consumatori è sempre più attirando l'interesse di ricercatori e professionisti al giorno d'oggi. Tuttavia, vi è ancora la mancanza di ricerca sull'impatto del contesto del settore su attività di co-creazione di design e l'efficacia e sulla tipologia di consumatori più disponibilità

a partecipare. In questa tesi, si delineano le differenze tra preferite strumenti di co-creazione, motivatori e gli inibitori di co-creazione per diverse tipologie di consumatori, per l'esame di co-creazione di tre diversi prodotti per gli utenti: lettore MP3, inseguitore fitness e stampa 3D. I nostri risultati dimostrano che i benefici di apprendimento hanno un impatto positivo sulla unirsi co-creazione per i co-creatori su misura e gli utenti ordinari; tuttavia la sua estensione è differente fra questi gruppi di consumatori. Inoltre, abbiamo osservato che esperti di mercato ei consumatori ad alto contenuto di natura emergenti sono l'unico segmento co-creatore che può essere stimolato a partecipare alle attività di co-creazione, da tutte le motivazioni utilizzate nel nostro studio. Il risultato più importante di questa tesi sono gli effetti inibitori sulla co-creatori. Mentre gli utenti di piombo e gli innovatori tendono a non essere influenzato sul rischio di screditare e di energia inibitori per l'adesione co-creazione, gli utenti ordinari sono inclini a ottenere demotivati entrare co-creazione quando si presentano questi inibitori. Crediamo che i risultati presentati in questa ricerca possono aiutare i manager di marketing per progettare meglio le attività di co-creazione che sarà più facile abbracciate dai consumatori.

Keywords (in Italian):

Co-creazione, Motivazioni, Inibitori, Strumenti di co-creazione, caratteristiche personalità

Introduction

Nowadays customers want, and have more influence on final products and services targeted to them. They prefer to buy a product which is a masterpiece of their own ideas and designs. They prefer to spend their time and energy to co-create an ideal offer which suits their needs. Thus, the involvement of consumers, as not merely passive audience but as co-inventors and co-developers with firms, is an emerging phenomenon in the market (Prahalad & Ramaswamy, 2004b) and firms need to know how to and which customers involve in this conjoint process. The more firms know about the needs of user, the more they can involve them in firm's activities, the more they can offer sustainable goods and services which would be easier embraced by the customers.

The offer value, once created by the firm alone, is going to be increasingly defined by the experience of customers and the interactions between those customers and companies instead of by the merely offer itself (Prahalad & Ramaswamy, 2004b). This implies that companies need to establish a very strong base for the co-creation activities to be happened easily and efficiently by customers. There are different ways that customers can express their ideas and opinions and put them into action. Examples for such tools are ideation contests (F. Piller & Walcher, 2006), lead user workshops (von Hippel, 2005, 2007) toolkits for user innovation (Von Hippel & Katz, 2002) and communities for customer co-creation (Füller, Matzler, & Hoppe, 2008).
Simultaneously there are many different users with different characteristics who might be willing to involve in co-creation activities. One could be a user with very knowledgeable background within a specific industry theme (von Hippel, 2005, 2007) one could be an ordinary user who just feels a need for a specific product and seeks to satisfy it; another one could be a loyal customer who has a strong relationship with a company (Füller et al., 2008). Some of these users who seem to have tendency toward co-creation activities more than others: Lead users, Innovators, Emergent nature users, Market maven have been shown to have a greater inclination toward innovation and co-creation participation than ordinary users (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010).

Thus, not considering which users involve, can be a loose of opportunities and efficiency for companies. Further, it can be even detrimental and can lead to losing fame of a company, as some dark sides related to co-creation experiences shown. Some unsuccessful co-creation experiences

confirm this side effect, such as the complaints and dissatisfaction generated by the "SPAR bag design contest" (Gebauer, Füller, & Pezzei, 2013) or by the Henkel packaging design contest, resulted in negative ideas gathering.

These users need to be motivated to participate in such activity. Several motivators and inhibitors have been found in prior research (Füller, 2010), some users participate in the co-creation activity to satisfy their own internal needs (Heidenreich & Handrich, 2015) such as lead users who are investing their time and energy involving in co-creation in order to benefit from the maximum usage satisfaction in future (Schuhmacher & Kuester, 2012; von Hippel, 1986). Some other users engage in co-creation activities due to external benefits they might get, as those users who seek monetary rewards or fame (Füller, 2010).
On the other hand there are some inhibitors to participating in co-creation activities that needs to be minimized, such as the cost of time spent in knowledge learning, logistic costs but even the psychological cost of project failure or idea appropriation by other consumers or the firm. Costs vary also depending on the method of co-creation used; where some methods need more time and energy to be fulfilled by people (such as lead user workshops), especially methods that are technically complex and for which people do not own the related technical knowledge for performing the tasks (Aarikka-Stenroos & Jaakkola, 2012).

However, even it has been proved, that an accurate combination of these motivators and a proper reduction of inhibitors, would stimulate users to involve in co-creation (Hoyer et al., 2010), one "design" does not fit all consumers. As prior researchers (Hoyer et al., 2010) claim there is a need to study which are the more willingness users' (and able) to participate in co-creation activities and what type of co-creation tools they prefer to use to do so; Further the specific motivations and inhibitors that stimulate each segment to participate in co-creation should be investigated as well (Hoyer et al., 2010).

Different industries were subjects of study about co-creation. For instance, Fredberg and Piller investigated the effect of tie strength on innovation in the sports industry (Fredberg & Piller, 2011). Furthermore, Prügl and Schreier studied the process of using toolkits for user innovation by lead users and ordinary users in computer games industry (Prugl & Schreier, 2006). In another article, Barilla Company was a case study of customer co-creation at the front end innovation (Martini & Massa, 2014).

The first objective of this research is to find a clue between users' characteristics and co-creation tools, hence identify which methods and tools are most suited for different consumer typologies, and thus spur co-creation activities efficiency and effectiveness. We assume that each user segment would prefer one or few co-creation tools on the basis of peculiar personality traits. Meanwhile, finding perceived benefits and costs for different users' typologies would be a complementary aim to this end. A second objective is to analyze the impact of the co-creation industry on the specific co-creation tools as well as motivators and inhibitors, as we believe that different type of industries will attire different typologies of co-creators.

Several implications could be derived by this research. From an academic point of view, we deepen our understanding of the factors that affect consumer participation, by analyzing the motivators, inhibitors and preferred tools of different user segments. Meanwhile, we investigate the impact of the industry on such preferences, which for the best of our knowledge has not still been explored in research yet. From a managerial point of view this research can help marketing and product managers in designing the co-creation tools that best suit for their industry and their targeted users and to identify motivators and obstacles to participate in co-creation activities.

LITERATURE REVIEW

1. CO-CREATION

In the past, the value creation of products and services were company-centric and consumers were passive without having any significant influence on the final outcome of a product or service. They were only consuming what it was created and produced. Nowadays, the consumers are more powerful influencing on the creation of value for the products and services which would be introduced to the market (Prahalad & Ramaswamy, 2004b). In the traditional view for value creation (Figure 1), consumers had no allotment with the firms and the boundaries were distinct. The value was created in the firms without considering any seat for the consumers rather than consumption (Porter, 1980). Firms were just focusing on the customers who are targeted to consume what they produce. Therefore, the interaction between firms and consumers was only an

economic exchange and there were no places determined for the value creation of consumers (Normann & Ramirez, 1994).

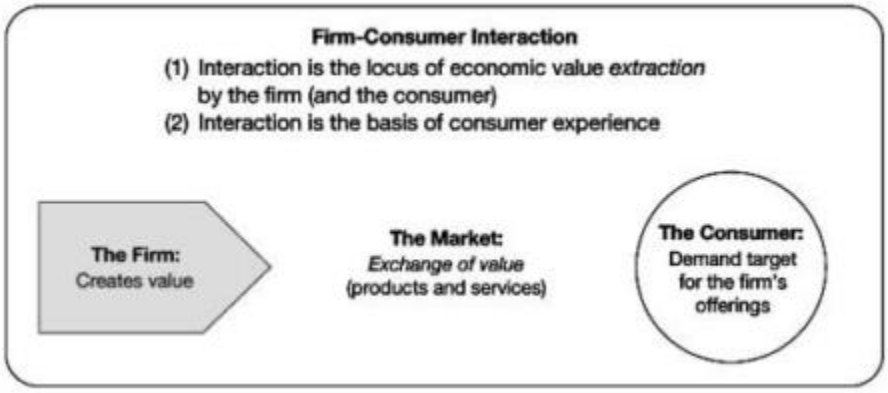

Figure 1- Traditional concept of the market (Prahalad & Ramaswamy, 2004b)

Instead, in the emerging view for value creation, the economic exchange is not the only type of exchange that can be happened between firms and consumers. Consumers have a better access to information and they are more knowledgeable. They know what they want and they are ready to transmit their point of view in order to gain the maximum satisfaction usage of products and services. Not recognizing such a shift by a firm will lead to the severity of approaching value creation activities, hence they have to decrease their internal costs related the value chain activities (Prahalad & Ramaswamy, 2004b). Nowadays, customers in general are willingness to have a dialog with firms for the co-creation of value related to the products and services they consume. This communication can be done from the early stage of production to the last stage of after sales service (Lusch & Vargo, 2006).

The quality of such dialog is important since each user's peerless experiences could become as a source of competitive advantage for the company. Eventually, there are the firms which have to make a precious dialog with consumers and must learn from them; by this, they are letting them to co-create value at the first level of co-creation, therefore preparing a well-heeled dialog condition is the first building block of co-creation activities. On the other hand, dialog would be valuable whenever the consumers have access and transparency to the information. This can make the co-creation process faster as the customers are informed about the norms of company and extra information that are essential to co-create value is accumulated. The last element of DART model (Figure 2) proposed by Prahalad & Ramaswamy is the risk-benefits associated to

the co-creation activities. By having a strong base for dialog, access and transparency, consumers can effectively and providentially evaluate the risks and benefits for the process of value co-creation they want to participate (Prahalad & Ramaswamy, 2004b).

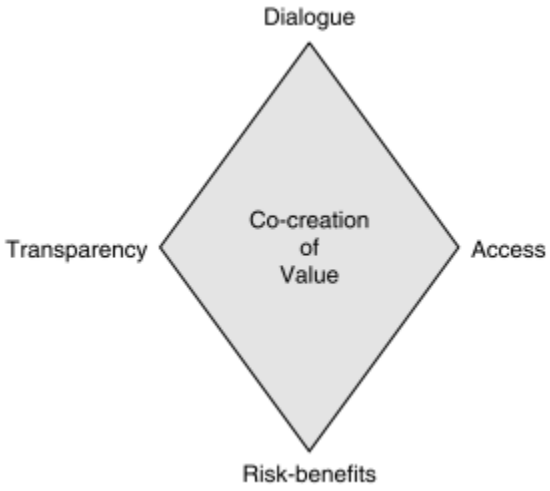

Figure 2- Co-creation's building blocks (Prahalad & Ramaswamy, 2004b)

Thus, in the emerging concept of value creation, consumers are actively engaging with companies for this purpose (Figure 3) and they are both collaborating to co-create value (Prahalad & Ramaswamy, 2004b). Co-creation is defined as set of activities that is performed by the customers while firms provide tools and methods for a successful collaboration occurrence between producers and consumers (F. T. Piller, Ihl, & Vossen, 2010).

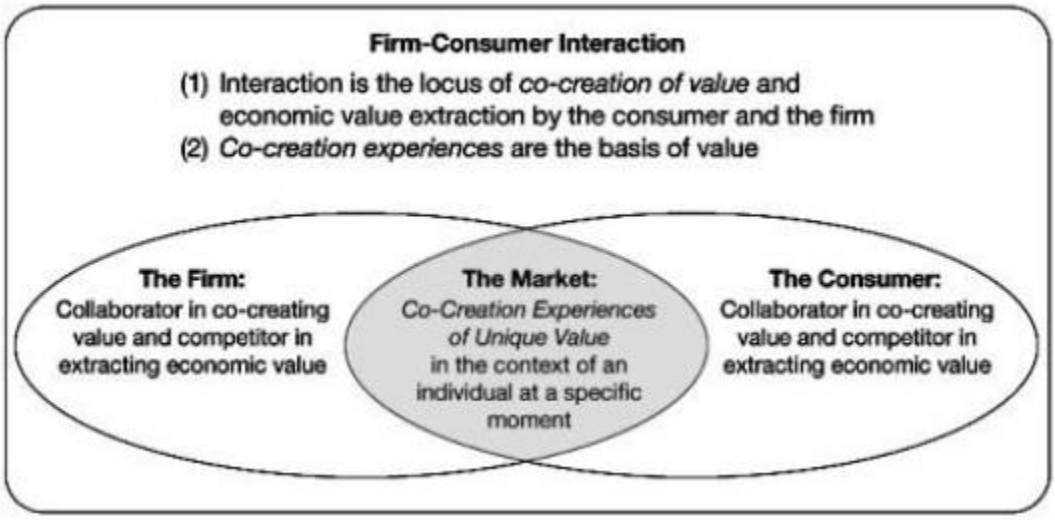

Figure 3- The emerging concept of the market (Prahalad & Ramaswamy, 2004b)

2. Co-creator segments

Consumers who engage in co-creation activity are studied by their personality traits. Lead users, Innovators, Market mavens and Emergent nature users seem to have better contribution to the co-creation activity and are tailored to this conjoint process (Hoyer et al., 2010). Each consumer's singularity affects the way co-creation happens (Prahalad & Ramaswamy, 2004a). Some consumers have more knowledge related to a particular product and its related technology while another consumer is more knowledgeable about the markets.

Consumers as co-creators are categorized in different classifications. For instance Storbacka and Lehtinen defined co-creators as active people who personalize their relationship with suppliers and categorized them as a customer (payer), a consumer, a competence provider, a controller of quality, a co-producer and a co-marketer (Storbacka & Lehtinen, 2001). On the other hand, Aarikka-Stenroos & Jaakkola divided the co-creators into a classification on the basis of the stage each consumer participate in co-creation activities. They categorized co-creators as a co-diagnoser, a co-designer, a co-producer, a co-implementer, a co-marketer and a co-developer (Aarikka-Stenroos & Jaakkola, 2012).

These classifications are just some examples made by well-known scholars. There are also other types of users with different characteristics who participate in the co-creation of value and are studied in prior research. Having strong-tie relationship or weak-tie relationship with companies is another classification of users' that might be taken into consideration in co-creation. For instance, Fredberg and Piller have studied the effects of customers' tie strength in the co-creation of value within sport industry (Fredberg & Piller, 2011).

Lastly, in some co-creation literatures, ordinary users were being studied for their orientation toward co-creation activities, however there are different perceptions found about their engagement activities and its outcomes (Kristensson, Gustafsson, & Archer, 2004; Magnusson, 2009).

In this study we selected to investigate tailored co-creators who are mentioned in previous research (Hoyer et al., 2010).

2.1. Lead user

The Lead user theory goes back to what Von Hippel introduced in his research at which he believed that the user innovation has to be focused on this succinct type of users insomuch that they are the most suitable one to co-create value (von Hippel, 1986). Lead users are those consumers feeling a need prior than other users in a given market and can gain benefits more than others by receiving a solution to their need. These users seem to have different attitudes toward co-creation activities contrasting with other consumer typologies (von Hippel, 2005). On the basis of such definition, lead users face particular type of needs sooner than the majority of users in the market encounter them. Since they are at the leading edge of knowledge, it is assumed that they are able to satisfy those needs by making a solution out of those needs. In other words, they are the best type of users who can provide a solution to a need which could become prevalent for other users in future, therefore they are suited to join co-creation and resolve this necessity (Schreier & Prügl, 2008).

Prior studies have shown that these users are the best type of users in terms of proposing radical and profitable ideas; moreover their ideas are identified as the most novel and original idea which can enter a market (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002; von Hippel, 2005). However, to find and integrate these users is a complicated process which needs more information and explorations. (Magnusson, 2009)

These users are recognized to have a high level of innovativeness while they also seem disposed to hold a high locus of control (Schreier & Prügl, 2008). Schreier and Prügl also found that these users have high consumer knowledge and use experience at the industry field which they are active and engaging.

2.2. Innovator

Scholars have remarked different definition for innovativeness. Once Hirschman focused on the new product adoption behavior of consumers and used a term of “actualized innovativeness” for this concept. Therefore, innovativeness was studied on the basis of new product adoption behavior (Hirschman, 1980). In their empirical study, Schreier and Prügl used two different

measures to assess this behavior. They used “Number of adoptions” and “Time of adoption” to evaluate this term (Schreier & Prügl, 2008).

On the other hand, other scholars used the innate consumer innovativeness in order to define a user’s level of innovativeness. In this case the innovative traits of each individual consumer have been observed (Kirton, 1976). This definition is implied to show general innovativeness of a consumer and does not cover the “domain specific innovativeness” which is related to an individual’s innovativeness regarding a product or category of a product.

In addition, Moore entitled the innovators as “Technology enthusiasts” in his book, “crossing the chasm” and believed that they are first to adopt new technologies. He then continued reckoning them as the people who will support businesses by giving feedbacks of the product from the very first stage of production to the last stage. According to what Moore suggested, the innovators would be helpful if they observe frankness from the business owner. It is important to them having access to the most technical responsible person of a firm whenever encountering problems. Finally, they do not seem to be as influential as early adopters in the customers’ buying decisions (Moore, 1991).

2.3. Market Maven

The term “Market Maven” was first developed by Feick & Price. They introduced this concept as those individuals who are expert in the marketplace in general and are willing to share their knowledge by initiating a discussion and are influential on the buying decisions of other consumers (Feick & Price, 1987). The difference between Market maven users and Opinion Leaders is that the market mavens’ expertise and knowledge are not product-centric; in fact their expertise is related to the market instead of particular products. Nevertheless, prior research demonstrated that there are overlap between market maven and two other traits “opinion leadership” and “early adopter” (Feick & Price, 1987). Since general marketplace knowledge for these users exists, they tend to have information about the new products which will be introduced to the market too. This implies to have a commonality with the early adoption behavior. On the other hand, due to their participation in discussions they need to possess more information about products too; therefore they might obtain more in-depth knowledge regarding the same new

products. This connotes to the opinion leadership behavior (Feick & Price, 1987). Finally in their empirical study, Feick & Price found that these users are distinct form early adopters and opinion leaders, simultaneously they are willing to read customer reviews and do searching activities, couponing and reading advertisements.

2.4. Emergent nature

Emergent nature users are those users who are able to imagine and visualize the concepts and ideas which might be useful and prospering for the marketplace in future. The users high in emergent nature are supposed to be more influential in improving an idea (for example proposing a nifty concept) rather than other tailored users such as lead users or innovators (Hoffman, Kopalle, & Novak, 2009).

In their empirical study, Hoffman et al. explored that product concepts which are developed by users high in emergent nature have higher purchase probability contrasting those concepts developed by other users. It is also been found that the users high in emergent nature tend to improve the utilitarian aspect of a product comparing to the lead users due to their personality traits. These users are mentioned to be optimist, creative, having a high ability of rational thinking and visualizing and finally they are open to experience new products. These characteristics have made them to be able developing a product concept which would be embraced by the bulk of consumers in a marketplace (Hoffman et al., 2009).

2.5. Ordinary user

Scholars have found different outcomes for the participation of ordinary users into co-creation activities (Kristensson et al., 2004; Magnusson, 2009). Ordinary users are those who are not lead users or are opposed to the professional users. They have high using knowledge same as lead users but their technology knowledge is low literally opposite to lead users (Magnusson, 2009).

Once Kristensson et al. found in their study that ordinary users possess more valuable and original ideas which implies that they hold a diverse style of thoughts (Kristensson et al., 2004), against this finding, Magnusson remarked that since ordinary users do not possess high technical knowledge of a product, their ideas are not potentially able to be implemented. He continues

confirming the intuition that Von Hippel discussed before and declares that the innovative capacity of (ordinary) users is distant from lead users for being implemented (Magnusson, 2009; von Hippel, 2007).

Magnusson's study revealed that actually it is the users' lack of high technical knowledge that makes them able to ponder out of dominant logic hence be more creative. On the other hand he presumes that a minimum technical knowledge is required in order to know the feasibility of proposed idea. Thus, the characteristic of an ordinary user who can think out of dominant logic can help firms to manipulate innovation into their business. Indeed, they are showing the route and direction, the solution is needed to be developed by the firms consequently (Magnusson, 2009).

3. Co-creation tool

Co-creators use different tools to participate in co-creation activities. Firms provide the users this foundation to make co-creation occur. Examples for tools include Community for customer co-creation (Füller et al., 2008), Toolkits for user innovation (Von Hippel & Katz, 2002), Ideation contest (F. Piller & Walcher, 2006) and Lead user workshop (von Hippel, 2005, 2007). Mass customization, user generated content, mass collaboration and open source are other mechanisms that users utilize for co-creating value with companies (Coates, 2009).

Researchers have found relationships between the co-creation tools and personality traits of users who engage in co-creation. For instance it is found that virtual communities make it possible for the companies to access and integrate lead users into their co-creation initiatives (Mahr & Lievens, 2012). Therefore it seems that lead users like to share their knowledge through virtual communities hence they might be interested into co-creating value there.

Firms need to know which customer segments are suited to join co-creation activities within their businesses and what kind of co-creation tools each of them seek to involve.

3.1. Community for customer co-creation

A virtual community is a network of people who have common interests, initiating discussions about a topic of interest and helping each other by responding to the discussions. The community is specialized without any geographical border for the users and its users seek social relations (Muniz & O'guinn, 2001). Blackberry, Lenovo Thinkpad, Starbucks and many other brands hold a virtual community to involve their customers into the co-creation process, sharing their knowledge, helping each other to experience the utmost satisfaction usage of the product or services (Hoyer et al., 2010).
Shared consciousness, common rituals and sense of a moral responsibility among others are the characteristics of a virtual community (McAlexander, Schouten, & Koenig, 2002).

Benefits of participating in community are enjoyment, fun, satisfaction and intrinsic motivations that appear while involving in the "discussing and responding" stream (Lerner & Tirole, 2001)

3.2. Toolkits for user innovation

The aim of toolkits is to outsource innovation and design activities which are traditionally in the hands of the firms to the consumers. Toolkits give the consumers an ability to promote their desired product on the basis of their unique needs (Thomke & von Hippel, 2002; Von Hippel & Katz, 2002). Toolkits or configurators derive benefits both for consumers and the firms. Instead of transmitting knowledge and need in a time-consuming manner between producers and consumers for the development of a product or service, toolkits are designed in order to save the time by doing trial-and-error tasks in a cost-efficient way (Thomke & von Hippel, 2002; Von Hippel & Katz, 2002; Von Hippel, 2001).

Toolkits are designed and based on two considerable facts. First, it is known that firms can provide solution information for a development process of products and second, consumers hold need information that are essential in order to integrate and apply to the solution processes (Von Hippel, 2001). Consumers take the responsibility of designing and customizing on the basis of their unique needs. Some toolkits are appropriate for the users who have professional technical underlying field knowledge while some other toolkits are easy to handle for the majority of users

in a marketplace. For instance Cocomyles is providing a toolkit for designing a tailored customized dress which might need designing knowledge for the users to be able to participate however simplistic designs can get done without having high knowledge of designing.

It is worthy to point that there is a difference between the toolkits on the basis of degrees of freedom they give to consumers. Scholars believe that when consumers are given a determined degree of choices which involves them in the product development process, they are not co-creating value and in fact they are playing a role of customizing. Therefore, the toolkit approach divides into two distinct part, those allotting a limited freedom degree to users are assumed as toolkits for customization, while the latter refers to when the toolkits are not preventing consumers from actualizing their ideas by giving them the maximum freedom degree condition and those toolkits are deemed to besteading co-creation occurrence (Kristensson, Matthing, & Johansson, 2008; Prahalad & Ramaswamy, 2004b). LEGO DesignByMe, Dell's product configurator are the examples to this approach (F. Piller, Vossen, & Ihl, 2012).

3.3. Ideation contest

The main purpose of ideation contest is to produce a novel idea. In an ideation contest, a firm which is seeking a solution to a problem will ask people to propose ideas that can help solving their problem. Then the firm would select the best idea(s) among participants allocating reward(s) for one or more individuals who give the best solution (F. Piller et al., 2012; F. Piller & Walcher, 2006).

Firms adopt different strategies for giving prizes and rewards to the best solutions. Some of them offer monetary rewards to the best solution while other focus on personal benefits to the users such as pride of authorship, participation in product success and getting recognition (Franke & Shah, 2001; Füller, 2010; F. Piller et al., 2012).

Prior researches showed that in ideation contest the relationship between participants does not form only as competitors. Eventually they read each other's ideas, give comments and evaluate them, thus their relationship together are more social than it seems to be. Another research shows that ideation contest will work better when the participants are accommodating each other and helpful or contrarily when there is no cooperative relationship at all (Bullinger, Neyer, Rass, &

Moeslein, 2010; Hutter, Hautz, Füller, Mueller, & Matzler, 2011; F. Piller et al., 2012). BMW, Boeing and InnoCentive are the famous companies which held ideation contests to public. Boeing's "787 Dreamliner airplane" design concept is the output of this initiative (F. Piller et al., 2012; F. Piller & Walcher, 2006).

3.4. Lead user workshop

By this method, the lead users are invited to join a workshop working together with company representatives on product or service development. The company seeks to extract innovative ideas from the lead users who are recognized as one of the best segment of customers helping companies for performing co-creation activities and making radical innovations (Hienerth, Potz, & von Hippel, 2007; Lilien et al., 2002; von Hippel, 2005).

Lilien et al. described that the participants of this workshop start to work in small groups primarily and then they gather to design final concepts which suits company needs. Afterward they jointly assess the concepts and ideas in terms of feasibility, attractiveness to the consumers and management priorities (Lilien et al., 2002). Lastly, it is explained that the workshop lasts for two or three days and consists of around 15 people by which third of them are the company's representatives (Hienerth et al., 2007). LEGO and 3M are the exemplars of the companies adopting this method for product and service development (Hienerth, Lettl, & Keinz, 2013; Hienerth et al., 2007).

4. Motivations and inhibitors

Diverse types of motivations and inhibitors stimulate consumers to participate in co-creation activities. Motivations are those stimulators which a consumer might receive while doing the tasks of co-creation or after finishing them. For instance consumers who involve in a contest are mostly expecting an opportunity to receive monetary rewards (Füller, 2010; F. Piller & Walcher, 2006), while those consumers who are active in virtual communities are benefiting inwardly by helping others or by getting solved their dilemma (Lerner & Tirole, 2001). Simultaneously, there

are costs related to their engagement; these users are spending their time and energy for participating in such activities (Kankanhalli, Tan, & Wei, 2005). These are the sacrifices they sustain while co-creating value with a firm.

Several scholars have worked on this research stream and different classifications used by different researchers; however a general classification of intrinsic and extrinsic motivations is mostly used. Unfortunately inhibitors to co-creation is still unexplored and there are few studies on the social exchange literatures which noted nuggets of this concept (Etgar, 2008; Kankanhalli et al., 2005).

In our research we use Learning, Social, Personal, Hedonic and Monetary motivations for studying the benefits that users perceive while participating in co-creation activities.

In our study we focus on the benefits and costs which are only triggered by consumers.

4.1. Motivations

It is necessary to consider that a combination of motivations is needed in order to stimulate users for participating in co-creation activities (Füller, 2010; Hoyer et al., 2010).

4.1.1. Learning

Learning motivations is referring to the extent that a consumer is going to learn by participating in co-creation activities. This type of motivations encompasses the knowledge about products or services and their underlying technology (Blumler & Katz, 1974; Nambisan & Baron, 2007).

The knowledge could be shared by the communication of consumers together and by the co-creation process itself. The exchange of information that occurs between participants, improving skills and finding solutions to unanswered topics are exemplars to learning motivation (Füller, 2010; Nambisan & Baron, 2007; Wasko & Faraj, 2000).

4.1.2. Social

Social relationships occur between community of participants and the firm. The result might become as strengthening ties between firm and consumers or the social esteem that a consumer receives due to its valuable idea or knowledge sharing (Hoyer et al., 2010; Nambisan & Baron, 2007).

It is found in prior researches that consumers are motivated to participate in virtual communities by the social benefits they perceive, such as strong social identity and sense of belongingness to the community (Muniz & O'guinn, 2001; Nambisan & Baron, 2007). "Amazon's top 100 reviewer" recognition is an example of this benefit (Hoyer et al., 2010).

4.1.3. Personal

Users' personal benefits such as fame, reputation in network of participants, status and authority

are the affecting exemplars toward participating in co-creation activities. Some companies incentivize consumers to participate in co-creation by offering them status credibility benefits for their prospective rich ideas or suggestions. This type of motivation offering usually happens when a company is establishing an ideation contest to public, looking for an innovative solution. Pride of authorship and getting recognition for product success are kinds of incentives which motivate consumers to engage in these activities (Muniz & O'guinn, 2001; Nambisan & Baron, 2007).

4.1.4. Hedonic

Hedonic motivations refer to the enjoyment, fun and pleasure that a consumer perceives for participating in co-creation. Talking about beloved product brings fun and enjoyment by itself, participating in a problem solving task related to the beloved product derives more hedonic experiences to the consumers (Muniz & O'guinn, 2001; Nambisan & Baron, 2007).

The co-creation activity merely could be also stimulating. The consumers engage in product and service development for its own sake because they find the activity playful and entertaining (Füller, 2010).

4.1.5. Monetary

It is common that firms give some monetary incentives to the users for participating in the co-creation activity centered on their business. Monetary incentives could be in the form of financial reward, product giveaways, lotteries and coupons. The dark side of proposing monetary incentives is that some consumers might engage in the activity just because of this benefit they might receive while they do not have any underlying knowledge (Füller, 2010).

4.2. Inhibitors

There are relatively few literatures on co-creation inhibitors and further studies are needed to shed light on this topic, though we quote from handful literatures working on this topic (Aarikka-Stenroos & Jaakkola, 2012; Hoyer et al., 2010; Kankanhalli et al., 2005).

4.2.1. Effort

Co-creating consumers need to spend their time and energy to participate in co-creation activities while the result of their participation is ambiguous. These costs can prevent consumers to involve in co-creation and companies need to minimize these foregone opportunities to the co-creating consumers (Aarikka-Stenroos & Jaakkola, 2012; Hoyer et al., 2010; Kankanhalli et al., 2005). The more a co-creation process gets complex or technical, the higher effort by consumers needs in order to perform the tasks.

4.2.2. Risk of discredit

Co-creating consumers find co-creation a risky activity due to its ambiguity of results. They have concerns of losing intellectual property rights, being deceived by the firms, getting mocked by other people for their proposed ideas and comments. As a consequence, they are afraid of losing

power and their unique status within the community (Aarikka-Stenroos & Jaakkola, 2012; Kankanhalli et al., 2005). These sacrifices too can prevent consumers for participating in co-creation activities and firms need to minimize it and create a trustworthy co-creation activity environment.

METHODOLOGY

Overview, Research Questions and Framework of the study

The ability to detect individuals more prone to co-create, their motivation and inhibitors and their preferred tools is of critical concern to marketing and innovation scholars and of vital importance for firms, given also the fast growing of co-creation practices all around the world. Existing research did not answer to such questions, providing a useful, but incomplete, view of drivers of consumer participation. Therefore, as it is shown in our conceptual model (Figure 4), we believe that there are different preferences of co-creation tool for customer segments and also different motivations and inhibitors each of them perceive before co-creating value. These relations also differ for each industry context. To this end, we investigated the following questions:

RQ1: Do co-creation motivations and inhibitors differ among diverse consumers' typologies?

RQ2: Do consumer personal traits influence the preferred co-creation tools? If yes, in which extent?

RQ3: Do co-creation motivations and inhibitors differ among diverse product categories?

RQ4: Does the specific product category affect the preferred co-creation tools?

Three different studies have been done to investigate the difference for each industry field and product domain. All the studies cover RQ1 and RQ2 by which we executed Multiple Regression Analysis and Multinomial Logistic Regression respectively to understand the effects and impacts between variables. For RQ3, a Multivariate Analysis of Variance has been done and for RQ4, again Multinomial Logistic Regression analysis is performed to understand the differences and to understand whether the same results could be replicated in different domains or not.

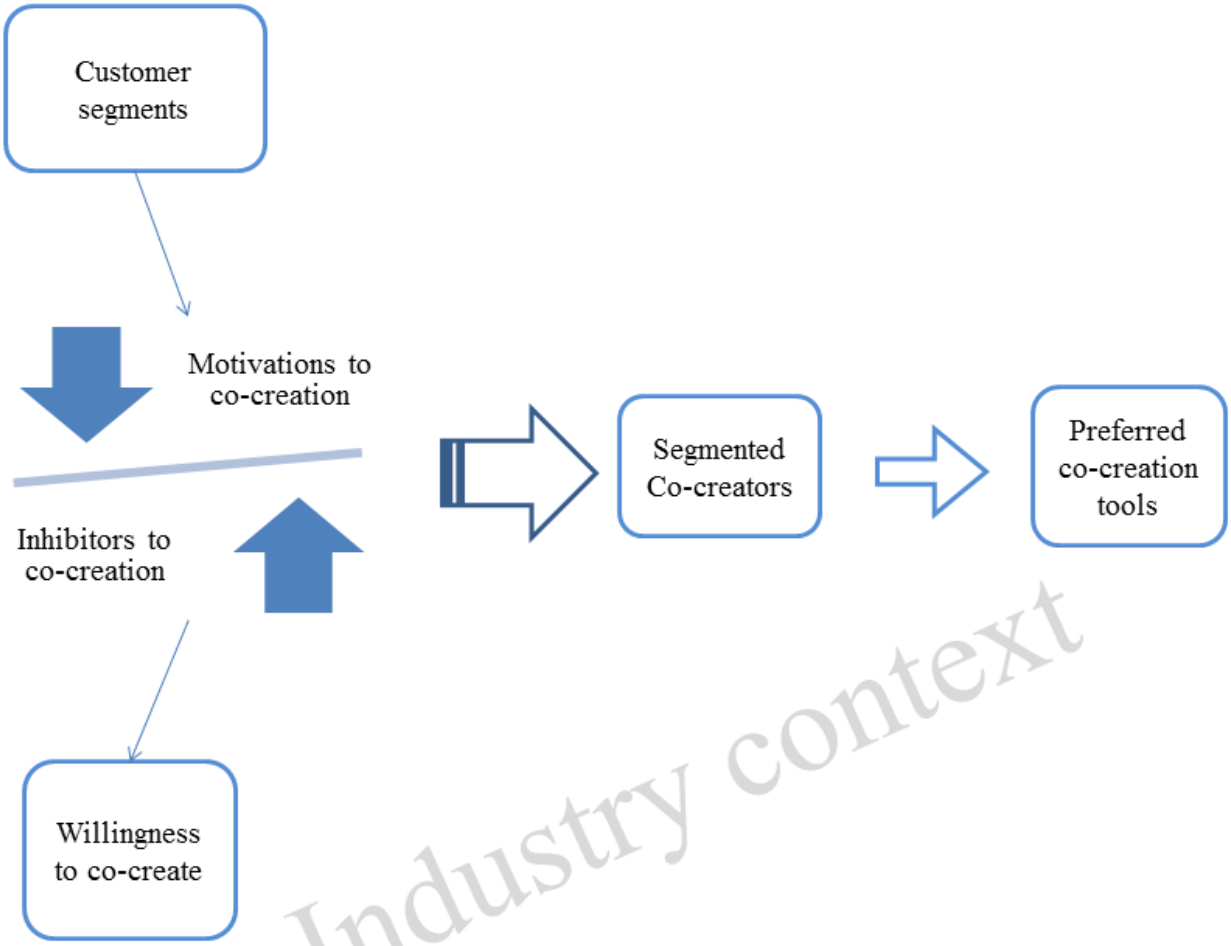

Figure 4- Conceptual framework

In order to answer to above questions, we conducted three separate surveys among final consumers. We studied co-creation activities for three different products: MP3 players, fitness trackers and 3D printing. While most of the scholars have observed co-creation activities in some traditional industries such as automotive, food, fashion and semiconductors, we selected these industries as they are fast growing ones, which an increasing number of passionate users. Hence, we believed these industries can benefit from co-creation strategies development. Moreover, different product categories are investigated, able to capture different shades of consumer preferences, thus appropriate for our research aim. To answer our research questions we conducted the research in several Countries, to analyze the effect, and possible confounds, of demographic characteristics, above the personality traits.

In the first section of the survey, users were asked to answer to questions related to personality traits, which helped us to classify each user to a category of co-creators, as defined by prior literature. In the second section, the motivations and the costs for participating in co-creation were analyzed. Finally, their preference and inclination toward using co-creation tools have been investigated. Demographic related questions were asked in the last part of the survey.

Our main effort was to distribute the survey to the interested users of each product, therefore from the beginning of this stage we were communicating with administrators and moderators of virtual communities related to the same fields of our study. Facebook pages, groups and LinkedIn groups were utilized to share the surveys to the users.

Some students from international universities around the world, who were interested into at least one product of our study, participated in the survey. Therefore, "Sharif University of Technology", "Politecnico di Milano" and "University of Minho" students were the majority of students participated in the surveys. Around first 50 responses were collected from acquaintances who mostly answered to MP3 player and Fitness tracker surveys.

On the other hand, some Iranian website managers assisted us to collect more data. "Fitnessmagazine.ir", "Ebee.ir" and "Anjammidam.com" were the websites which helped us for this matter. Fitnessmagazine.ir embedded our survey related to "Fitness tracker" on the first page of their website for two weeks. They also shared our survey on their Instagram's profile incentivizing its users to participate in the research by giving three professional thermos to three participants for free. Consequent follow up emails were done by the manager in order to reach the maximum number of participants. Furthermore, Ebee.ir and Anjammidam.com also sent emails to their registered users through a campaign providing all three different surveys and asked the interested users to participate in the study. We received great amount of participants by these collaborations.

Study 1 was done for 3D printing and we received 187 valid responses for this industry field. The majority of respondents were men (74.9%), 77.5% of respondents were in their third decade of their life (Between 20 and 30), the majority holds Master degree (63.6%) and 67.9% of them were Iranian.

For the second study, MP3 player and its users were being investigated. We received 182 valid responses for the related survey while again the majority of respondents were men (69.2%), 78.6% of participants were in their third decade of their life, 58.8% of them were holding Master degree and finally 80.8% were Iranian.

For the third study which was related to fitness tracker, the statistics were nearly the same as study number two. The total number of valid responses was 172, by which 65.7% of respondents were men, 70.3% of respondents were in their third decade of their life, 52.3% holds Master degree and they were predominantly Iranian (85.5%).

Complete demographic data are provided in Appendix.

All constructs that we used in our survey were adapted from prior literature and in following we look into and describe them.

Measurement

We measured all the items (except for consumer knowledge and use experience) using a 7 point Likert scale, anchored by 7 as strongly agree and 1 as strongly disagree. Consumer knowledge items were following a 5 point Likert scale while 5 refers to strongly agree and 1 implies strongly disagree. The use experience measures consisted of two items which were open to be answered by number of years and hours respectively as they were more formative than reflective in nature (Schreier & Prügl, 2008).

Regarding the co-creation tool, we asked consumers' intention by employing those defined co-creation tools in our literature and asked whether they have used or experienced those tools before.

The appendix, lists the measures used and their sources.

1. Lead user

For the lead userness, four constructs were adapted from Schreier & Prügl research (Schreier & Prügl, 2008). Consumer Knowledge, consists of three items (Cronbach's alpha = .73) which evaluates the self-assessment of consumers' knowledge about the products which are get studied

in our research. Use Experience, encompasses two items related to the amount of time (the approximate number of years, approximate number of hours per week) that consumers use those products. Locus of Control refers to the beliefs of people about the extent they can control events and accidents happen in their life (Rotter, 1954) and consists of 8 items (alpha = .71). Last construct for lead userness is Innovativeness which indicates the innate innovativeness of users and in our study we used 11 items for this construct (alpha = .81).

2. Innovator

For assessing the general innovativeness of participants we used four items which is derived from Agarwal & Prasad study (Agarwal & Prasad, 1998). The Cronbach's alpa for these four items was sufficiently high (alpha = .74).

3. Market maven

For this concept we employed constructs from the research of Feick & Price (Feick & Price, 1987). Six items describe the consumers' attitudes toward knowledge about market and being considered as market maven users. The alpha for these six items was 0.88.

4. Emergent nature

This concept implies the ability to process ideas both rationally and visually, being creative and having an openness attitude, therefore the constructs are employed from previous study on these consumers (Hoffman et al., 2009). Eight items used to assess this personality trait and the coefficient alpha was high enough (alpha = .89).

5. Ordinary user

Magnusson's study constructs have been employed to capture the ordinary user attitudes (Magnusson, 2009). The high knowledge of application domain (i.e. consumer knowledge) on one side and on the other side, low knowledge of technical domain (i.e. low technical readiness index) are used to define the ordinary user concept. Twelve items were used to apprehend this concept (alpha = .689).

6. Learning motivation

Three items cover to assess this construct from the study of Nambisan & Baron (alpha = .85). These items explain the extent that consumers believe information and knowledge related benefits will derive them toward co-creation activities (Nambisan & Baron, 2007).

7. Social motivation

Three items consists for this construct with Cronbach's alpha equal to .76. The items explain the extent that consumers believe social interactions and relationships benefits can affect their willingness to participate in co-creation (Nambisan & Baron, 2007).

8. Personal motivation

Nambisan & Baron, used four items to evaluate the extent that an individual get motivated to engage in co-creation by personal benefits such as obtaining reputation, fame and other personal achievements (Nambisan & Baron, 2007). The coefficient alpha for this construct was .84.

9. Hedonic motivation

Again, our study follows the construct that Nambisan & Baron used in their study to capture the hedonic motivations (e.g. having fun, pleasure and get entertained) which can stimulate a consumer to join co-creation activities (Nambisan & Baron, 2007). We used four items for this construct (alpha = .85).

10. Monetary motivation

For this construct we employed three items from the prior study (Sun, Fang, & Lim, 2012) to discover the extent that a user perceives monetary benefits (i.e. direct and indirect monetary benefits) are encouraging to involve in co-creation (alpha = .87).

11. Risk of discredit inhibitor

Kankanhalli et al. assigned five items to evaluate discredit inhibitor risk such as losing fame, status or power among a community for participating in co-creation activities (Kankanhalli et al., 2005). The Cronbach's alpha was sufficiently high for these items (alpha = .85)

12. Effort inhibitor

Effort inhibitor was measured by four items Kankanhalli et al. determined in their study (Kankanhalli et al., 2005). This construct bespeaks the time and energy expenses users perceive preventive to join co-creation (alpha = .78).

RESULTS

In this part of this thesis, related data analysis to our "Research Questions" is prepared. Three different studies have been done in order to find the similarities and differences between product domains. Each study includes three sections in which supportive results are provided and further discussion will be based on these results. Overall data has been analyzed following these three studies and will help to compare the results for these three different product domains.

1. Study 1 (3D Printing)

1.1. Descriptive results

In this section, descriptive results and frequencies are provided and demographic results will be described in Appendix.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Lead user field independent	187	3.47	6.78	5.1751	.59515
Lead user field dependent factor	187	-1.66213	3.59590	-.3883036	.85296890
innovator	187	1.50	7.00	5.1324	1.09903
market maven	187	1.17	7.00	4.9973	1.18199
emergent nature	187	2.25	7.00	5.2099	.95728
ordinary user	187	1.75	4.92	3.3050	.68160
Learning motivations	187	2.33	7.00	5.5704	.91137
Social motivations	187	1.00	7.00	4.8930	1.07284
Personal motivations	187	2.00	7.00	4.8997	1.01284
Hedonic motivations	187	1.25	7.00	5.1872	.99818
Monetary motivations	187	1.00	7.00	4.5045	1.25883
Risk of discredit inhibitors	187	1.00	6.50	2.8824	1.18267
Energy inhibitors	187	1.00	6.40	3.7786	1.09818
Valid N (listwise)	187				

Figure 5 - descriptive results for the study 1

	Yes	No
Having co-creation experience	37 (19.8%)	150 (80.2%)
Willingness to co-create value	162 (86.6%)	25 (13.4%)
Experience of participating in community for customer co-creation	45 (24.1%)	142 (75.9%)
Experience of using toolkits for user innovation	34 (18.2%)	153 (81.8%)
Experience of participating in ideation contest	13 (7%)	174 (93%)
Experience of joining lead user workshop	20 (10.7%)	167 (89.3%)

Table 1- descriptive results for the study 1

	Interested into use/participate	Not interested into use/participate
Community for customer co-creation	77 (41.2%)	110 (58.8%)
Toolkits for user innovation	77 (41.2%)	110 (58.8%)
Ideation contest	68 (36.4%)	119 (63.6%)
Lead user workshop	59 (31.6%)	128 (68.4%)

Table 2- descriptive results for the study 1

1.2. Motivations and inhibitors relationship with personality trait

A bivariate correlation analysis (Pearson) has been performed to investigate the relationships between each category of personality traits and the motivators and the inhibitors described in the literature.

	Learning motivation	Social motivation	Personal motivation	Hedonic motivation	Monetary motivation	Risk of discredit inhibitor	Energy inhibitor
Lead user field independent	** Correlation = .224 Sig = .002	* Correlation = .167 Sig = .023	Correlation = .108 Sig = .143	Correlation = .135 Sig = .065	Correlation = .072 Sig = .324	** Correlation = -.190 Sig = .009	** Correlation = -.231 Sig = .001
Lead user field dependent	** Correlation = .222 Sig = .002	Correlation = .002 Sig = .983	* Correlation = .176 Sig = .016	** Correlation = .209 Sig = .004	Correlation = -.018 Sig = .803	Correlation = .004 Sig = .958	Correlation = -.004 Sig = .953
Innovator	** Correlation = .225 Sig = .002	Correlation = .105 Sig = .152	Correlation = .033 Sig = .659	Correlation = .110 Sig = .135	Correlation = -.041 Sig = .577	** Correlation = -.242 Sig = .001	** Correlation = -.226 Sig = .002

Market maven	** Correlation = .212 Sig = .004	** Correlation = .225 Sig = .002	** Correlation = .202 Sig = .006	** Correlation = .271 Sig = .000	Correlation = .068 Sig = .355	Correlation = .022 Sig = .763	Correlation = -.095 Sig = .196
Emergent nature	** Correlation = .454 Sig = .000	** Correlation = .214 Sig = .003	** Correlation = .306 Sig = .000	** Correlation = .276 Sig = .000	Correlation = .079 Sig = .284	Correlation = -.059 Sig = .419	Correlation = -.073 Sig = .324
Ordinary user	Correlation = .128 Sig = .082	Correlation = .100 Sig = .174	** Correlation = .264 Sig = .000	Correlation = .141 Sig = .054	* Correlation = .144 Sig = .049	** Correlation = .231 Sig = .002	* Correlation = .179 Sig = .014

Table 3 - Pearson correlation analysis between personality traits and motivations/inhibitors for study 1

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

2. Study 2 (MP3 Player)

2.1. Descriptive results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Lead user field independent	182	2.82	6.69	4.9813	.60931
Lead user field dependent factor	180	-1.24546	2.76771	.7981360	.91203710
innovator	182	1.00	7.00	4.9835	1.20702
market maven	182	1.00	7.00	4.8645	1.21466
emergent nature	182	1.50	7.00	4.9505	.92425
ordinary user	182	1.63	5.08	3.6110	.53973
Learning motivations	182	2.00	7.00	5.2674	1.00303
Social motivations	182	2.00	6.67	4.7674	.99118
Personal motivations	182	1.00	7.00	4.6978	1.12941
Hedonic motivations	182	2.00	7.00	4.9025	1.09861
Monetary motivations	182	1.00	7.00	4.4011	1.35513
Risk of discredit inhibitors	182	1.00	6.75	2.9725	1.14305
Energy inhibitors	182	1.00	7.00	3.9066	1.01821
Valid N (listwise)	180				

Figure 6- descriptive results for the study 2

	Yes	No
Having co-creation experience	30 (16.5%)	152 (83.5%)
Willingness to co-create value	134 (73.6%)	48 (26.4%)
Experience of participating in community for customer co-	40 (22%)	142 (78%)

creation		
Experience of using toolkits for user innovation	27 (14.8%)	155 (85.2%)
Experience of participating in ideation contest	8 (4.4%)	174 (95.6%)
Experience of joining lead user workshop	15 (8.2%)	167 (91.8%)

Table 4- descriptive results for the study 2

	Interested into use/participate	Not interested into use/participate
Community for customer co-creation	69 (37.9%)	113 (62.1%)
Toolkits for user innovation	43(23.6%)	139 (76.4%)
Ideation contest	71 (39%)	111 (61%)
Lead user workshop	42 (23.1%)	140 (76.9%)

Table 5- descriptive results for the study 2

2.2. Motivations and inhibitors relationship with personality traits

	Learning motivation	Social motivation	Personal motivation	Hedonic motivation	Monetary motivation	Risk of discredit inhibitor	Energy inhibitor
Lead user field independent	* Correlation = .180 Sig = .015	Correlation = .096 Sig = .196	Correlation = .126 Sig = .091	Correlation = .128 Sig = .085	Correlation = -.005 Sig = .950	Correlation = -.122 Sig = .102	Correlation = -.092 Sig = .219
Lead user field dependent	Correlation = .136 Sig = .069	Correlation = .136 Sig = .069	Correlation = .129 Sig = .085	* Correlation = .176 Sig = .018	Correlation = -.044 Sig = .554	Correlation = .024 Sig = .745	Correlation = -.106 Sig = .157
Innovator	Correlation = .130 Sig = .080	Correlation = .096 Sig = .195	** Correlation = .199 Sig = .007	Correlation = .115 Sig = .122	Correlation = -.009 Sig = .905	Correlation = -.007 Sig = .922	Correlation = -.055 Sig = .457
Market maven	** Correlation = .213 Sig = .004	* Correlation = .186 Sig = .012	** Correlation = .260 Sig = .000	** Correlation = .334 Sig = .000	* Correlation = .152 Sig = .040	Correlation = .125 Sig = .092	Correlation = .054 Sig = .472
Emergent nature	** Correlation = .237 Sig = .001	** Correlation = .278 Sig = .000	** Correlation = .327 Sig = .000	** Correlation = .226 Sig = .002	Correlation = .118 Sig = .114	Correlation = .078 Sig = .292	Correlation = .067 Sig = .367

Ordinary user	Correlation = .119 Sig = .109	* Correlation = .160 Sig = .031	Correlation = .095 Sig = .203	* Correlation = .176 Sig = .017	Correlation = .047 Sig = .529	* Correlation = .190 Sig = .010	Correlation = .015 Sig = .839

Table 6 - Pearson correlation analysis between personality traits and motivations/inhibitors for study 2

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

3. Study 3 (Fitness tracker)

3.1. Descriptive results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Lead user field independent	172	2.75	6.71	5.0540	.62096
Lead user field dependent factor	172	-1.66213	1.72731	-.3035935	.72424720
innovator	172	2.00	7.00	5.0741	1.07841
market maven	172	1.00	7.00	5.0329	1.17072
emergent nature	172	1.88	7.00	5.1163	1.05223
ordinary user	172	1.38	4.54	3.2832	.57968
Learning motivations	172	1.67	7.00	5.2519	1.02145
Social motivations	172	1.00	7.00	4.8295	1.10259
Personal motivations	172	1.00	7.00	4.7427	1.05770
Hedonic motivations	172	1.00	7.00	4.8779	1.09307
Monetary motivations	172	1.00	7.00	4.3566	1.43274
Risk of discredit inhibitors	172	1.00	6.00	2.8241	1.14227
Energy inhibitors	172	1.00	6.40	3.7942	1.06764
Valid N (listwise)	172				

Figure 7- descriptive results for the study 3

	Yes	No
Having co-creation experience	30 (17.4%)	142 (82.6%)
Willingness to co-create value	129 (75%)	43 (25%)
Experience of participating in community for customer co-creation	34 (19.8%)	138 (80.2%)
Experience of using toolkits for user innovation	20 (11.6%)	152 (88.4%)
Experience of participating in ideation contest	13 (7.6%)	159 (92.4%)
Experience of joining lead user workshop	13 (7.6%)	159 (92.4%)

Table 7- descriptive results for the study 3

	Interested into use/participate	Not interested into use/participate
Community for customer co-creation	53 (30.8%)	119 (69.2%)
Toolkits for user innovation	43(23.6%)	105 (61%)
Ideation contest	60 (34.9%)	112 (65.1%)
Lead user workshop	45 (26.2%)	127 (73.8%)

Table 8- descriptive results for the study 3

3.2. Motivations and inhibitors relationship with personality traits

	Learning motivation	Social motivation	Personal motivation	Hedonic motivation	Monetary motivation	Risk of discredit inhibitor	Energy inhibitor
Lead user field independent	** Correlation = .224 Sig = .003	Correlation = .147 Sig = .055	* Correlation = .173 Sig = .024	Correlation = .097 Sig = .204	Correlation = -.030 Sig = .696	** Correlation = -.303 Sig = .000	Correlation = -.080 Sig = .299
Lead user field dependent	* Correlation = .184 Sig = .016	* Correlation = .160 Sig = .036	** Correlation = .220 Sig = .004	Correlation = .118 Sig = .123	Correlation = -.028 Sig = .718	Correlation = -.146 Sig = .055	Correlation = .036 Sig = .644
Innovator	** Correlation = .286 Sig = .000	** Correlation = .229 Sig = .003	** Correlation = .300 Sig = .000	Correlation = .135 Sig = .078	* Correlation = .174 Sig = .022	* Correlation = -.180 Sig = .018	Correlation = -.099 Sig = .197
Market maven	** Correlation = .307 Sig = .000	** Correlation = .259 Sig = .001	** Correlation = .287 Sig = .000	Correlation = .117 Sig = .127	** Correlation = .236 Sig = .002	Correlation = -.115 Sig = .132	* Correlation = -.190 Sig = .012
Emergent nature	** Correlation = .385 Sig = .000	** Correlation = .374 Sig = .000	** Correlation = .456 Sig = .000	** Correlation = .282 Sig = .000	** Correlation = .280 Sig = .000	** Correlation = -.231 Sig = .002	* Correlation = -.175 Sig = .022
Ordinary user	Correlation = .100 Sig = .194	Correlation = .080 Sig = .294	Correlation = .068 Sig = .377	Correlation = .133 Sig = .083	Correlation = -.074 Sig = .332	Correlation = .036 Sig = .643	Correlation = .070 Sig = .364

Table 9- Pearson correlation analysis between personality traits and motivations/inhibitors for study 3

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

4. Overall data

In this part, we considered all the data together, performed separate analysis to find results by holding a stronger effect size.

4.1. Descriptive results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Lead user field independent	541	2.75	6.78	5.0714	.61245
Lead user field dependent factor	539	-1.66213	3.59590	.0349418	.99437973
innovator	541	1.00	7.00	5.0638	1.12981
market maven	541	1.00	7.00	4.9640	1.18954
emergent nature	541	1.50	7.00	5.0929	.98200
ordinary user	541	1.38	5.08	3.4010	.62173
Learning motivations	541	1.67	7.00	5.3672	.98772
Social motivations	541	1.00	7.00	4.8306	1.05519
Personal motivations	541	1.00	7.00	4.7819	1.06904
Hedonic motivations	541	1.00	7.00	4.9931	1.07058
Monetary motivations	541	1.00	7.00	4.4227	1.34731
Risk of discredit inhibitors	541	1.00	6.75	2.8942	1.15611
Energy inhibitors	541	1.00	7.00	3.8266	1.06167
Valid N (listwise)	539				

Figure 8- descriptive results for overall data

	Yes	No
Having co-creation experience	97 (17.9%)	444 (82.1%)
Willingness to co-create value	425 (78.6%)	116 (21.4%)
Experience of participating in community for customer co-creation	119 (22%)	422 (78%)
Experience of using toolkits for user innovation	81 (15%)	460 (85%)
Experience of participating in ideation contest	34 (6.3%)	507 (93.7%)
Experience of joining lead user workshop	48 (8.9%)	493 (91.1%)

Table 10- descriptive results for overall data

	Interested into use/participate	Not interested into use/participate
Community for customer co-creation	199 (36.8%)	342 (63.2%)
Toolkits for user innovation	187 (34.6%)	354 (65.4%)

Ideation contest	199 (36.8%)	342 (63.2%)
Lead user workshop	146 (27%)	395 (73%)

Table 11- descriptive results fo overall data

4.2. Motivations and inhibitors relationship with personality traits

	Learning motivation	Social motivation	Personal motivation	Hedonic motivation	Monetary motivation	Risk of discredit inhibitor	Energy inhibitor
Lead user field independent	** Correlation = .223 Sig = .000	** Correlation = .142 Sig = .001	** Correlation = .144 Sig = .001	** Correlation = .134 Sig = .002	Correlation = .016 Sig = .717	** Correlation = -.204 Sig = .000	** Correlation = -.141 Sig = .001
Lead user field dependent	* Correlation = .102 Sig = .018	Correlation = .052 Sig = .232	* Correlation = .104 Sig = .016	* Correlation = .100 Sig = .020	Correlation = -.036 Sig = .404	Correlation = -.003 Sig = .949	Correlation = .000 Sig = .999
Innovator	** Correlation = .213 Sig = .000	** Correlation = .143 Sig = .001	** Correlation = .180 Sig = .000	** Correlation = .124 Sig = .004	Correlation = .041 Sig = .337	** Correlation = -.141 Sig = .001	** Correlation = -.130 Sig = .002
Market maven	** Correlation = .243 Sig = .000	** Correlation = .225 Sig = .000	** Correlation = .251 Sig = .000	** Correlation = .243 Sig = .000	** Correlation = .152 Sig = .000	Correlation = .012 Sig = .789	Correlation = -.079 Sig = .067
Emergent nature	** Correlation = .364 Sig = .000	** Correlation = .294 Sig = .000	** Correlation = .367 Sig = .000	** Correlation = .268 Sig = .000	** Correlation = .166 Sig = .000	Correlation = -.077 Sig = .072	Correlation = -.070 Sig = .102
Ordinary user	* Correlation = .095 Sig = .028	* Correlation = .097 Sig = .024	** Correlation = .131 Sig = .002	** Correlation = .129 Sig = .003	Correlation = .039 Sig = .363	** Correlation = .166 Sig = .000	* Correlation = .108 Sig = .012

Table 12- Pearson correlation analysis between personality traits and motivations/inhibitors for overall data

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

4.3. Product domain's impact on preferred co-creation tool

4.3.1. 3D printing and MP3 Player comparing to Fitness tracker

Parameter estimates

Co-creation preference tool (a)		B	Std.Error	Wald	Df	Sig.	Exp(B)
Communities for customer co-creation	Intercept	-.201	.183	1.196	1	.274	
	(industrytype=1)	.214	.244	.767	1	.381	1.238
	(industrytype=2)	.644	.268	5.775	1	.016	1.904
	(industrytype=3)	0 (b)	.	.	0	.	.
Ideation contest	Intercept	-.147	.181	.657	1	.417	
	(industrytype=1)	.022	.246	.008	1	.928	1.023
	(industrytype=2)	.634	.265	5.721	1	.017	1.895
	(industrytype=3)	0 (b)	.	.	0	.	.
Lead user workshop	Intercept	-.452	.197	5.243	1	.022	
	(industrytype=1)	.203	.262	.598	1	.439	1.224
	(industrytype=2)	.404	.294	1.888	1	.169	1.498
	(industrytype=3)	0 (b)	.	.	0	.	.

Table 13 - Industry field (all), co-creation tool Multinomial Logistic Regression estimates

(a). The reference category is: Toolkits for user innovation

(b). This parameter is set to zero because it is redundant

4.3.2. 3D printing comparing to MP3 Player

Parameter estimates

Co-creation preference tool (a)		B	Std.Error	Wald	Df	Sig.	Exp(B)
Communities for customer co-creation	Intercept	.443	.195	5.151	1	.023	
	(industrytype=1)	-.431	.253	2.897	1	.089	.650
	(industrytype=2)	0 (b)	.	.	0	.	.
Ideation contest	Intercept	.487	.194	6.325	1	.012	
	(industrytype=1)	-.612	.255	5.734	1	.017	.542
	(industrytype=2)	0 (b)	.	.	0	.	.
Lead user workshop	Intercept	-.048	.218	.048	1	.827	
	(industrytype=1)	.202	.278	.527	1	.468	.817

	(industrytype=2)	0 (b)	.	.	0	.	.

Table 14 - Industry field (3D printing and MP3 Player), co-creation tool Multinomial Logistic Regression estimates

(a). The reference category is: Toolkits for user innovation

(b). This parameter is set to zero because it is redundant

4.4. Motivations and inhibitors relationship with product domain

4.4.1. Motivations

Multiple Comparisons

Bonferroni

Dependent Variable	(I) Industry type	(J) Industry type	Mean Difference (I-J)	Std. Error	Sig.
Learning motivations	3D Printing	MP3 Player	.3030*	.10188	.009
		Fitness tracker	.3185*	.10337	.007
	MP3 Player	3D Printing	-.3030*	.10188	.009
		Fitness tracker	.0155	.10404	1.000
	Fitness tracker	3D Printing	-.3185*	.10337	.007
		MP3 Player	-.0155	.10404	1.000
Social motivations	3D Printing	MP3 Player	.1256	.10994	.761
		Fitness tracker	.0636	.11155	1.000
	MP3 Player	3D Printing	-.1256	.10994	.761
		Fitness tracker	-.0621	.11228	1.000
	Fitness tracker	3D Printing	-.0636	.11155	1.000
		MP3 Player	.0621	.11228	1.000
Personal motivations	3D Printing	MP3 Player	.2019	.11115	.209
		Fitness tracker	.1570	.11277	.493
	MP3 Player	3D Printing	-.2019	.11115	.209
		Fitness tracker	-.0449	.11351	1.000
	Fitness tracker	3D Printing	-.1570	.11277	.493
		MP3 Player	.0449	.11351	1.000
Hedonic motivations	3D Printing	MP3 Player	.2847*	.11070	.031
		Fitness tracker	.3093*	.11232	.018
	MP3 Player	3D Printing	-.2847*	.11070	.031
		Fitness tracker	.0246	.11306	1.000
	Fitness tracker	3D Printing	-.3093*	.11232	.018
		MP3 Player	-.0246	.11306	1.000

Monetary motivations	3D Printing	MP3 Player	.1034	.14040	1.000
		Fitness tracker	.1479	.14245	.899
	MP3 Player	3D Printing	-.1034	.14040	1.000
		Fitness tracker	.0445	.14339	1.000
	Fitness tracker	3D Printing	-.1479	.14245	.899
		MP3 Player	-.0445	.14339	1.000

Table 15 - Industry field, motivation POST HOC test Multivariate ANOVA

Based on observed means.

The error term is Mean Square(Error) = 1.818.

*. The mean difference is significant at the .05 level.

FINDINGS

Findings of study 1 (3D Printing):

As described already, in study 1, the effects of motivations and inhibitors for each personality trait has been discovered. Furthermore, the preferred co-creation tool that each segment of consumers seeks to use is investigated.

Lead userness (field independent) has positive correlation with learning and social motivations. Learning motivation is positively correlated with this trait, r = .224, p = .002. There was a positive correlation between social motivation and this trait too, r = .167, p = .023. At the same time, energy (r = -.231, p = .001) and risk of discredit (r = -.190, p = .009) inhibitors both have negative correlations with this personality trait.

For Lead userness (field dependent), learning (r = .222, p = .002), personal (r = .176, p = .016) and hedonic (r = .209, p = .004) benefits are those motivations which have positive correlations with this trait.

Innovators held positive correlation only with learning motivations (r = .225, p = .002). Meanwhile, negative correlation between innovators and both inhibitors to co-creation found. There was a negative correlation between risk of discredit inhibitor (r = -.242, p = .001) and energy inhibitor (r = -.226, p = .002) with this trait.

Market mavens had significantly positive correlation with all motivations ($p < .01$) except with monetary motivations. Learning (r = .212, p = .004), Social (r = .225, p = .002), Personal (r = .202, p = .006) and Hedonic (r = .271, p = .000) motivations have impacts on this consumer segment.

Emergent nature consumers possessed positive correlation with learning (r = .454, p = .000), social (r = .214, p = .003), personal (r = .306, p = .000) and hedonic (r = .276, p = .000) motivations.

The last consumer segment "ordinary users" shows positive correlation with personal (r = .264, p = .000) and monetary (r = .144, p = .049) motivations. These users have significantly positive correlation with both inhibitors of the study. Risk of discredit inhibitor is positively correlated with this trait (r = .231, p = .002), and there was a positive correlation between energy inhibitors and ordinary users (r = .179, p = .014).

For co-creation tool, we were not able to identify any statistically significant result which implies need of further studies to investigate this concept more in depth.

Findings of study 2 (MP3 Player):

Field independent lead users demonstrate positive correlation with learning (r = .180, p = .015).

Field dependent lead userness was positively correlated with hedonic motivation (r = .176, p = .018).

Innovators indicated positive correlation with personal motivations (r = .199, p = .007).

Market mavens interestingly had positive correlation with all motivations for participating in co-creation. Learning (r = .213, p = .004), social (r = .186, p = .012), personal (r = .260, p = .000), hedonic (r = .334, p = .000) and monetary (r = .152, p = .040) motivations deem to be important and influential in motivating these users to join co-creation.

Emergent nature users showed positive correlation with all motivations except for the monetary motivations. Learning motivation (r = .237, p = .001), social motivation (r = .278, p = .000), personal motivation (r = .327, p = .000) and hedonic motivation (r = .226, p = .002) were positively correlated with this trait.

Ordinary users demonstrate positive correlations with social (r = .160, p = .031) and hedonic motivations (r = .176, p = .017). Risk of discredit inhibitors is illustrated to be positively correlated with ordinary users (r = .190, p = .010).

The multinomial logistic regression analysis did not show any significant result for the co-creation tools and consumer segments. Therefore, we were not able to reject the null hypothesis within this study, thus further studies need to explore this research stream.

Findings of study 3 (Fitness tracker):

Field independent lead userness is positively correlated with learning (r = .224, p = .003), and personal motivations (r = .173, p = .024). Risk of discredit inhibitor is negatively correlated with this personality trait (r = -.303, p = .000).

Field dependent lead userness has positive correlation with learning (r = .184, p = .016), social (r = .160, p = .036) and personal (r = .220, p = .004).

Learning (r = .286, p = .000), social (r = .229, p = .003), personal (r = .300, p = .000) and monetary (r = .174, p = .022) motivations are positively correlated to the third consumer segment (innovator). Risk of discredit inhibitor has a negative correlation with this user typology as Pearson correlation shows (r = -.180, p = .018).

Market maven shows that they have positive correlation with learning (r = .307, p = .000), social (r = .259, p = .001), personal (r = .287, p = .000) and monetary motivations (r = .236, p = .002). This typology of user has a negative correlation with energy inhibitors (r = -.190, p = .012).

Emergent nature is positively correlated with all motivations used in our study. Learning (r = .385, p = .000), social (r = .374, p = .000), personal (r = .456, p = .000), hedonic (r = .282, p = .000) and monetary (r = .280, p = .000) motivations are all important to this typology of users for joining co-creation. Risk of discredit (r = -.231, p = .002) and energy (r = -.175, p = .022) inhibitors have negative correlation with consumers being high in emergent nature.

Lastly, ordinary users in this study did not hold any significant results for the correlation with motivations and inhibitors to co-creation.

Again, as for the relationship between preferred co-creation tool and personality trait, we were not able to observe any significant results, thus we can infer further studies to work on this part of research and explore this undiscovered part of our research.

Findings of overall data:

Lead user field independent variable has positive correlations with all motivations except with the monetary motivations. Learning (r = .223, p = .000), social (r = .142, p = .001), personal (r = .144, p = .001) and hedonic (r = .134, p = .002) seem to influence and be stimulating to lead users joining co-creation activities. Meanwhile risk of discredit (r = -.204, p = .000) and energy (r = -.141, p = .001) inhibitors are negatively correlated with this personality trait.

Field dependent lead userness maintains positive correlations with learning (r = .102, p = .018), personal (r = .104, p = .016) and hedonic (r = .100, p = .020) motivations.

Innovator has positive correlations with learning (r = .213, p = .000), social (r = .143, p = .001), personal (r = .180, p = .000) and hedonic motivations (r = .124, p = .004). Risk of discredit (r = -.141, p = .001) and energy (r = -.130, p = .002) inhibitors hold negative correlations with innovator.

Learning (r = .243, p = .000), social (r = .225, p = .000), personal (r = .251, p = .000), hedonic (r = .243, p = .000) and monetary (r = .152, p = .000) motivations are positively correlated with market maven.

Emergent nature is positively correlated with learning (r = .364, p = .000), social (r = .294, p = .000), personal (r = .367, p = .000), hedonic (r = .268, p = .000) and monetary (r = .166, p = .000) motivations.

Ordinary users hold positive correlations with learning (r = .095, p = .028), social (r = .097, p = .024), personal (r = .131, p = .002) and hedonic (r = .129, p = .003) motivations. These users have positive correlation with risk of discredit inhibitors (r = .166, p = .000) and energy inhibitors (r = .108, p = .012).

The multinomial logistic regression implies no significant result for the relationship study between co-creation tool and personality trait.

The study for co-creation tool's impact on product domain does not represent a significant fitting model; however some significant results exist among the table of results which are discussed further.

The post hoc tests of observing relationship between product domain and motivations to co-creation stand significant for learning and hedonic motivations ($p < .01$).

DISCUSSION

The findings of these studies suggest that Lead users seem to be motivated to participate in co-creation activities by learning motivations, this is aligned to what is explored in prior research (Lüthje, 2004). In fact, learning motivations were the common benefits that lead users in all the three separate studies confirm its impact and importance for joining co-creation. Neither losing power, fame and knowledge in a community of participants, nor the effort and time consuming process of co-creation is not their concern for joining co-creation; eventually these items are not preventing them to participate in co-creation, therefore the risk of discredit inhibitors and energy inhibitors to co-creation are not considered important to these users.

Innovators who have innate innovativeness trait show a general positive attitude toward co-creation when they are offered to receive learning benefits by their participation in such activities. All other motivations do have importance and impact on these users but learning and knowledge

related benefits have a greater impact on these users. They perceive learning as the most triggering benefits they can obtain from this process (Lüthje, 2004). These users adopt the same viewpoint to inhibitors as lead users do. Risk of discredit and energy inhibitors are not accounted important to innovators' decision for participating in co-creation; in fact innovators count these items opposite to their essence of being preventive.

Market maven tends to be motivated participating in co-creation by all the benefits offered them but we observed that personal motivations have a bit greater impact on this consumer segment. Therefore the more personal benefits a co-creation activity offers, the more market maven seem to join co-creation to accomplish tasks of co-creation activity. However, as described before, there is a combination of motivators needed to stimulate users for involving in co-creation. Learning, social and personal motivations are in common for the users of three different products. For market maven we find a near correlation coefficient for all the motivations.

Consumers being high in emergent nature can be stimulated to join co-creation by all types of motivations. The ability of visual processing, having creative personality, reflection and openness, make this user typology to be influenced by an integration of these benefits (Hoffman et al., 2009). Separate studies showed that these users perceive learning, social, personal and hedonic motivations important to them. However, learning and personal motivations have greater coefficients which imply greater impacts on their participation in co-creation activity

All the motivations to co-creation except monetary benefits have positive impact on ordinary users' decision to join co-creation however the extent they are stimulated by these motivators are less than tailored co-creators considered in our study. It was interesting to find that this typology of users does count the inhibitors to co-creation preventive to their engagement in such activities. These users reckoned risk of discredit and energy inhibitors as important obstacles to the co-creation activity and the more such inhibitors exist, the more probability that they do not incline to participate in the co-creation tasks.

It seems that co-creators of MP3 player prefer to use communities for customer co-creation rather than toolkits for user innovation compared to co-creators of Fitness tracker. In line with this statement, co-creators of MP3 player prefer to being involved in ideation contest instead of toolkits for user innovation comparing to co-creators of Fitness tracker. Contrasting 3D printing to MP3 player co-creators, we observe that there is an inclination to use toolkits for user innovation instead of participating in ideation contest for 3D printing co-creators comparing to MP3 player co-creators.

The last part of our results indicates that learning and hedonic motivations to co-creation activities hold significant differences between 3D printing and those two other products. Consumers of 3D printing industry perceive learning benefits of co-creation more important than the consumers of MP3 player and Fitness tracker ($p < .01$). For hedonic benefits of co-creation, the same result is observed, however the significance level is less ($p < .05$). In other words, 3D

printing consumers count hedonic benefits more importantly for participating in co-creation activities in comparison with MP3 player and Fitness tracker consumers.

CONCLUSION, IMPLICATION AND LIMITATIONS

The aim of this research was to deepen our knowledge regarding co-creation experience by investigating the motivations and inhibitors to co-creation, shedding light on co-creation tools and exploring these two important factors' relationships with tailored co-creators. The aforesaid co-creators once suggested as the most appropriate segment of consumers who are able to participate in co-creation activities, needed to be studied concerning the very first steps of this conjoint process (Hoyer et al., 2010). This research stream enables managers to target co-creators into the co-creation task wisely. On the other hand, we believe that it has an utmost importance of being studied by the scholars regarding the principles of co-creation by showing the unique preference of motivations and inhibitors for each consumer segment.

"Inhibitors to co-creation" was almost unexplored in previous research and we believe that it needs to be considered for further studies. Even though many scholars have studied lead users attitudes and antecedents toward co-creation (Hui, 2011; Lettl, Hienerth, & Gemuenden, 2008; Mahr & Lievens, 2012; Schreier & Prügl, 2008; von Hippel, 1986), there are relatively few studies addressing the impact of other tailored consumer segments such as market maven and emergent nature on co-creation activities. Ordinary users have been studied in different researches but the findings are vaguely in opposite to each other (Kristensson et al., 2004; Magnusson, 2009).

The results of this thesis highlight the impact of motivations and inhibitors to tailored co-creators. First it is discovered that all the tailored co-creators count learning benefits as an important motivations for their participation in co-creation activities, however the extent of this impact is different between those consumers. Second, market mavens and consumers high in emergent nature get stimulated to join co-creation by all the motivators, however the latter trait seem to be influenced more by personal and learning motivations while the former trait bespeaks more or less the same influence by distinct motivations.

It is also realized that lead users in general do not perceive risk of discredit (e.g. losing fame, power or knowledge in a community of participants) and energy inhibitors (e.g. spending time and effort to join co-creation tasks, responding to further related opinions and comments) preventive to their participation in co-creation. Innovators deem the same as lead users, these types of inhibitors are out of focus for these users. The most interesting part of results shows that ordinary users are sensitive to the inhibitors by which it would prevent them to join co-creation. This is exactly opposite to the lead users and innovators' attitude. Risk of discredit and energy

inhibitors if arise in a given task related to co-creation, will hamper the participation of ordinary users in this joint process.

These findings can help firms on preparing suitable co-creation atmosphere for their co-creators. Scholars have indicated the importance of integrating lead users into co-creation activities in prior research (Lettl et al., 2008; Prugl & Schreier, 2006) but there are less evidence for the outcome of integrating market mavens and emergent nature consumers into co-creation activities. Another important issue is the mechanism of finding and integrating these users from marketplace. This subject matter has been studied for lead users in few researches but again there are no study covering for market mavens and (consumers high in) emergent nature (Hienerth et al., 2007; Hoyer et al., 2010; F. Piller & Walcher, 2006; von Hippel, 1986). Thus, we suggest future research to study this unexplored area. After targeting the preferred co-creators in the co-creation task, well-equipping them is the next step toward co-creation by increasing their perceived motivations and decreasing their inhibitors. Managers can make it more suitable to their participants by removing the obstacles and providing incentives. This infers exactly to the customers' benefit-cost equation for participating in co-creation (Hoyer et al., 2010). Therefore, this study reveals what kind of motivations and inhibitors are perceived important (and in what extent) to the tailored co-creators and ordinary users. Companies can adopt a strategy on the basis of this study's findings to increase the users' willingness to join co-creation.

Contrasting the co-creation tool on each product domain, we observe that there are slight differences for the preferred tool. It is found that MP3 player co-creators prefer to use communities for customer co-creation and ideation contest over toolkits for user innovation for the related co-creation task and this is standing against Fitness tracker co-creators' preference. Meanwhile it is discovered that 3D printing co-creators prefer to use toolkits for user innovation over ideation contest in comparison with MP3 player co-creators. Although our research studied only four prevalent types of co-creation tools, the results could be useful for managers of these three industry contexts by providing circumstances of adopting appropriate co-creation tool. Further study is needed to explore other methods and tools for co-creation and to verify again if the co-creators prefer to use or participate in any particular co-creation tool. Different product domain and its relation with co-creation tool will supplement this area of study for future research.

Lastly it is found that the users of 3D printing industry get stimulated to join co-creation by learning and hedonic benefits more than two other products of consumer electronic industry which were studied in our research. Thus, what this finding implies is drawing attention of 3D printing managers to be attentive that their consumers are ahead of consumer electronic industry's users being motivated to join co-creation by learning and hedonic benefits. We suggest future scholars to assess whether consumers of different products within the same industry field treat the same toward co-creation or there are significant differences in every aspects of this process.

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APPENDIX

Survey

Co-creation experience in MP3 player

Thank you for your participation at this research project on co-creation. The research aim is to understand what are the consumers' expectations and motives to co-create products/services with companies. We would be very grateful if you can dedicate us 10 minutes of your time to answer this questionnaire.

Your answers will be completely anonymous and collected ONLY for research purposes. There are not right or wrong answers. We thank you in advance for your collaboration. If you have any question about the survey, please contact us at "shahabeddin.zare@mail.polimi.it".

* Required

1. **1- Please rate how much you personally agree or disagree with these statements. Select the option that better represents how you feel or think personally** *
   Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
I often risk doing things differently							
I have original ideas							
I cope with several ideas at the same time							
I proliferate ideas							
I have fresh perspectives on old problems							
I am stimulating							
I will always think of something when stuck							
I can stand out in disagreement against a group							
I would sooner create than improve							
I like to vary set routines at a moment's notice							
I need the stimulation of frequent change							

2. **2-** *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
My life is determined by my own actions							
I am usually able to protect my personal interests							
I can pretty much predict what will happen in my life							
To a great extent my life is controlled by accidental happenings							
Often there is no chance of protecting my personal interest from bad luck happenings							
When I get what I want, it's usually because I am lucky							
People like myself have very little chance of protecting their personal interests where they conflict with those of strong pressure groups							
My life is chiefly controlled by powerful others							
I feel like what happens in my life is mostly determined by powerful people							

3. **3-** *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
If I heard about a new information technology, I would look for ways to experiment with it.	◯	◯	◯	◯	◯	◯	◯
Among my peers, I am usually the first to try out new technologies	◯	◯	◯	◯	◯	◯	◯
In general, I am hesitant to try out new information technologies.	◯	◯	◯	◯	◯	◯	◯
I like to experiment with new information technologies	◯	◯	◯	◯	◯	◯	◯

4. **4-** *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
I like introducing new brands and products to my friends.							
If someone asked where to get the best buy on several types of product, I could tell him or her where to shop							
My friends think of me as a good source of information when it comes to new products or sales.							
I like helping people by providing them with information about many kinds of products							
People ask me for information about products, places to shop, or sales							
I know about new products, sales and stores but I do not count myself as an expert of one particular product							

5. **5-** *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
When I see a new product or service idea, it is easy to visualize how it might fit into the life of an average person in the future.							

I like to experiment with new ideas for how to use products and services.							
I like to find patterns in complexity.							
When I hear about a new product or service idea, it is easy to imagine how it might be developed into an actual product or service.							
Even if I don't see an immediate use for a new product or service, I like to think about how I might use it in the future.							
If someone gave me a new product or service idea with no clear application, I could "fill in the blanks" so someone else would know what to do with it.							
Even if I don't see an immediate use for a new product or service, I like to imagine how people in general might use it in the future.							
I can picture how products and services of today could be improved to make them more appealing to the average person.							

6. **6-** *

Mark only one oval per row.

	Strongly	Disagree	Somewhat	Neither	Somewhat	Agree	Strongly

	disagree		disagree	agree or disagree	agree		agree
Technology gives people more control over their daily lives							
Technology gives me more freedom of mobility							
Products and services that use the newest technologies are much more convenient to use							
Other people come to me for advice on new technologies							
In general, I am among the first in my circle of friends to acquire new technology when it appears							
I can usually figure out new high-tech products and services without help from others							
Technical support lines are not helpful because they don't explain things in terms that I understand							
When I get technical support from a provider of a high-tech product or service, I sometimes feel as if I am being taken advantage of by someone who knows more than I do							
It is embarrassing when I have trouble with a high-tech gadget while people are watching							

I do not feel confident doing business with a place that can only be reached online							
I do not consider it safe giving out a credit card number over a computer							
Any business transaction I do electronically should be confirmed later with something in writing							

Let's talk about MP3 Players/iPods

MP3 Players/iPods are portable digital consumer electronics devices capable of storing and playing digital media such as audio, images, and video files. New technologies also encompasses other types of files such as applications, games, etc.

7. **7-** *

Mark only one oval per row.

	Very low	Low	Neutral	High	Very high
How high would you rate your expertise in MP3 player?					
How interested are you in the electronic consumer products compared to other MP3 Player users?					
How clear is your idea of which characteristics are important in providing you with maximum usage satisfaction when using MP3 Players?					

8. **8- How many hours per week do you use MP3 Player/iPod?** *

Mark only one oval.

- I do not use MP3 Player/iPod
- Less than one hour per week
- Between 1 and 3 hours per week
- Between 4 and 7 hours per week
- Between 8 and 14 hours per week
- More than 15 hours per week

9. **9- For how many years have you been using MP3 Player/iPod?** *

10. **10- Would you characterize MP3 Player/iPod as primarily a functional product or an entertainment/enjoyable product?** *
Mark only one oval.

	1	2	3	4	5	6	7	
Primarily for functional use	◯	◯	◯	◯	◯	◯	◯	Primarily for entertainment use

Now we will speak about co-creation activities

Co-creation is the involvement of consumers in the development of a product or service together with a firm. The consumer, such as you, can propose new product or service ideas, new product design, new functionalities or improvement in the existing ones. The consumer can usually participate through an online software. The ideas generated by the participants are then included in the product or service, subsequently commercialized by the firm.

11. **11- Have you ever participated in the co-creation of new products/services in MP3 Player/iPod with a firm? (for instance participating in ideation contests, involving in forums to discuss about a product or service which could be improved, reviewing a product in a website, etc.)** *
Mark only one oval.

◯ Yes
◯ No

12. **12- The following items relate to the varied benefits you can obtain by participating in co-creation activities with a firm regarding MP3 Player/iPod. Please indicate the extent to which you believe you can derive each by marking the appropriate box.** *
Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
Enhance my knowledge about the product and its usage	◯	◯	◯	◯	◯	◯	◯
Obtain solutions to specific product-usage related problems	◯	◯	◯	◯	◯	◯	◯
Enhance my knowledge about advances in product/service, related	◯	◯	◯	◯	◯	◯	◯

products/services and technology							
Expand my personal/social network							
Enhance the strength of my affiliation with the customer community							
Enhance my sense of belongingness with this community							
Enhance my status/reputation as product expert in the community							
Reinforce my product-related credibility/authority in the community							
Derive satisfaction from influencing product usage by other customers.							
Derive satisfaction from influencing product design and development							
Spend some enjoyable and relaxing time							
Derive fun and pleasure							
Entertain and stimulate my mind.							
Derive enjoyment from problem solving, idea generation, etc							
I receive some monetary rewards in return for participating in co-creation activities							
Participating in co-creation can help me earn some money.							
Seekers provide some monetary rewards to the participants of co-creation activities.							

13. **13- The following items relate to the varied costs and inhibitors you might face by participating in co-creation activities with a firm regarding MP3 Players/iPods. Please indicate the extent to which you believe you will face each by marking the appropriate box.** *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree
I lose my unique value in the community of participants	◯	◯	◯	◯	◯	◯	◯
I lose my power base in the community of participants	◯	◯	◯	◯	◯	◯	◯
I lose my knowledge that makes me stand out with respect to others	◯	◯	◯	◯	◯	◯	◯
I lose my knowledge that no one else has	◯	◯	◯	◯	◯	◯	◯
I do not have the time to enter my knowledge into co-creation activities	◯	◯	◯	◯	◯	◯	◯
It is laborious to codify my knowledge into co-creation activities	◯	◯	◯	◯	◯	◯	◯
The effort is high for me to codify my knowledge into co-creation activities	◯	◯	◯	◯	◯	◯	◯
I will have to spend additional time answering follow up questions	◯	◯	◯	◯	◯	◯	◯
My contribution to co-creation activities will evoke additional clarifications or requests for assistance	◯	◯	◯	◯	◯	◯	◯

14. **14- Have you ever used virtual communities (forums) related to MP3 Player/iPod? ***

A virtual community is "Groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or mechanism" (for instance posting a thread in virtual communities (forums) or Facebook groups, replying to a post in virtual communities (forums) or facebook groups)
Mark only one oval.

- ◯ Yes
- ◯ No

15. **15- Have you ever participated in ideation contests related to MP3 Player/iPod? ***

Ideation contest is a form of a contest that a company asks individuals to propose an idea in order to solve a problem or to improve a product/ service within a given timeframe. Ideation contests want to generate novel concepts and ideas. The firm then provides an award to the participants that generate the best solutions. (For instance, over 120,000 individuals around the world served as voluntary members of Boeing's World Design Team, contributing input to the design of its new 787 Dreamliner airplane (www.newairplane.com))
Mark only one oval.

- ◯ Yes
- ◯ No

16. **16- Have you ever used toolkits for developing a product/service in MP3 Player/iPod? ***

These systems are responsible for guiding the user through the configuration process of a product/service. The manufacturer's toolkit provides the necessary solution information in the form of, for example, programming languages or drawing software. Simply put, a toolkit for user innovation is a software application for designing products exactly matching customers' individual needs. (Dell's product configurator, LEGO DesignByMe, youdesignit.com)
Mark only one oval.

- ◯ Yes
- ◯ No

17. **17- Have you ever been invited and participated in Lead user workshop related to MP3 player? ***

In this method, users are invited to participate in a two to three days workshop in which lead users together with representatives from the firm work on the development of innovative new product/service concepts. Typically a lead user workshop has around 10 to 15 participants with a maximum of one third coming from the firm initiating the lead user study
Mark only one oval.

- ◯ Yes
- ◯ No

18. **18- Which co-creation tools do you think suits you most and you will prefer to use/participate in for MP3 Player/iPod?** *

(You can choose more than once choice)
Check all that apply.

- [ ] Communities for user co-creation
- [ ] Ideation contests
- [ ] Toolkits for user innovation
- [ ] Lead user workshop
- [ ] No one, I'm not interested into co-create value with a company for MP3 Player/iPod
- [ ] Other: .....

19. **19- What is your gender?** *

Mark only one oval.

- ◯ Female
- ◯ Male

20. **20- How old are you?** *

Mark only one oval.

- ◯ under 20
- ◯ 21-30
- ◯ 31-40
- ◯ 41-50
- ◯ Over 50

21. **21- What is your level of education?** *

Mark only one oval.

- ◯ High school
- ◯ Diploma
- ◯ Bachelor degree
- ◯ Master degree
- ◯ Doctorate degree/ MBA degree
- ◯ Other: .....

22. **22- What is your nationality?** *

.....

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Annexes

AUTHOR: (Schreier & Prügl, 2008)
TITLE: Extending lead-user theory: Antecedents and consequences of consumer's lead userness
OBJECTIVES: To extend lead user theory by exploring the antecedents and consequences of being lead user.
METHODOLOGY: Empirical study, three different studies in consumer sports fields have been done. Surveys have done for sailplaning, technical diving and kite surfing. The relationships between antecedents of lead userness and lead users' measures have been studied.
DISCUSSION: Field-related and field-independent lead userness impact consumer's leading edge status in a given domain. They tend to possess more consumer knowledge and use experience in the given domain, tend to have a high locus of control and are characterized having innovative personalities. In addition, they tend to adopt new products faster and heavier than ordinary users.
IMPLICATIONS AND GAPS: Integrating lead users into corporate NPD has been shown to be a highly promising means of developing breakthrough ideas; however, one major challenge in applying the lead-user method is the identification of leading-edge users in the first place. The findings of this study suggest that the field-dependent (consumer expertise and use experience) as well as field-independent variables (locus of control and innovativeness) might improve the lead-user search process. Finally, consumers' lead userness might serve as an additional positioning variable for the marketing of new products. If lead users are among the first to adopt, they can subsequently serve as opinion leaders who fuel and accelerate the process of diffusing newly launched products. Future studies are invited to address the external validity of the findings reported in this article by analyzing whether the patterns reported here can be replicated in different consumer domains and whether they can also be transferred to professional user field. It might also be valuable to identify further field-related (e.g., involvement) as well as field-independent variables (e.g., need for achievement) that are likely to help explain individuals' lead userness.

AUTHOR: (Nambisan & Baron, 2007)
TITLE: Interactions in virtual customer environments: Implications for product support and customer relationship management
OBJECTIVES: When organizations involve their customers in innovation and value creation activities through VCEs, what are the effects of customers' actual experiences in these environments
METHODOLOGY: Empirical study, surveying IBM and Microsoft customers who are joined to the VCE of those companies. "Participation" experiences of customers have been asked, "interaction benefits" (i.e. Learning, Social, Personal and Hedonic benefits), "affect", "attitudes toward the firm", "identification with the community", "product involvement" were the measures of the study.
DISCUSSION: Kind of interaction experiences customers have in VCEs, and especially, the beliefs about expected benefits these interaction experiences generate, significantly influence their actual continued participation in such forums. The findings also indicate that positive and negative feelings generated from such interactions shape customers' attitudes and perceptions regarding the host (that is, sponsoring) firm itself, and these, in turn, influence customers' willingness to continue their participation in such activities on future occasions.
IMPLICATIONS AND GAPS: The research had implications for Customer Value Co-Creation topic and also for Customer Relationship Management topic. 1- Given the importance of the "learning" benefit, it is imperative that firms focus on enhancing both the breadth and depth of product-related content in customer interactions, and more importantly, in making such content readily accessible to customers. Recent advances in technologies and tools provide some promising practical considerations in this regard. 2- Firms should also consider incorporating new organizational design elements that is, new organizational units, new positions, and so on to manage the VCE initiative. 3- Forming "gated" sub-communities within the larger online customer forum based on

customer interests and expertise.

4- Customers often like interacting with the people behind a product or a brand (McAlexander et al., 2002). As such, the strategy that we mentioned earlier of connecting VCE participants with internal product groups assumes importance. To the extent that firms facilitate such interactions, customers are likely to reciprocate with increased appreciation for the product and a willingness to participate in value creation activities associated with it.
5- Findings also imply the potential and the promise to combine customers' VCE interactions with appropriate offline product-related activities and interactions to enhance their overall experience.

As noted previously, customers can also play other types of roles in innovation and the nature of their interaction experience may vary with the role. Thus, although the basic structure of the interaction-based benefits remains the same, the relative impact of the different benefits may vary with the nature of the customer role. Lack of focus on customers' interactions outside the VCE is another limitation of the study. It is quite likely that customer participation in product support in the VCE as well as their attitude towards the host firm will be influenced by such external interactions (with the product, with the firm, and so on).

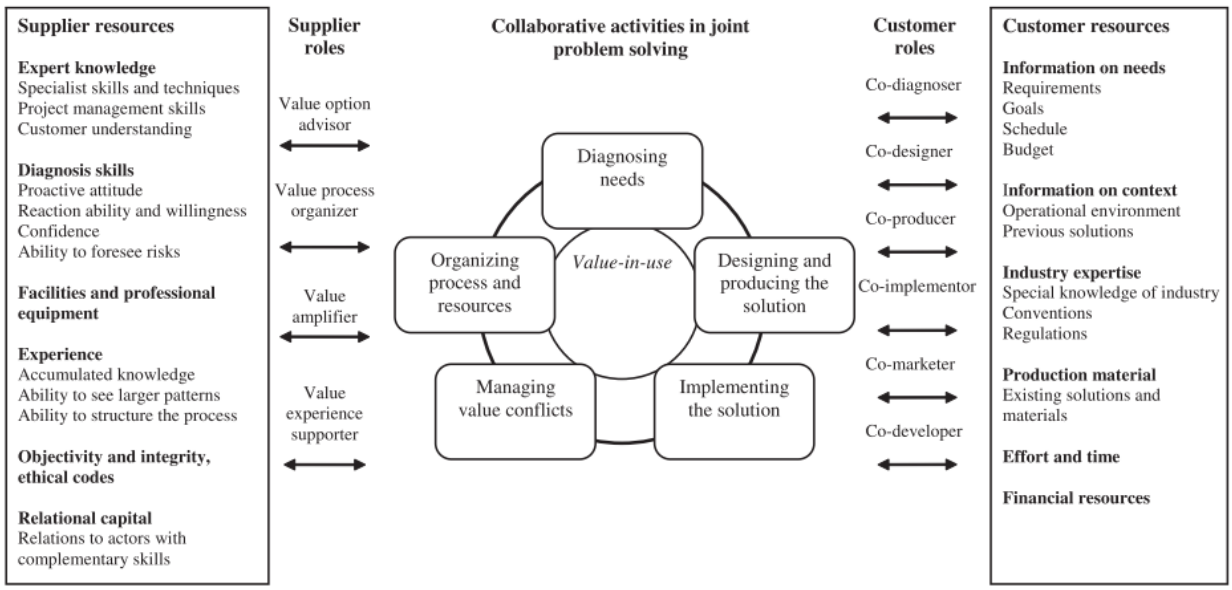
AUTHOR: (Aarikka-Stenroos & Jaakkola, 2012)
TITLE: Value co-creation in knowledge intensive business services: A dyadic perspective on the joint problem solving process.
OBJECTIVES: To identify and analyze the key activities constituting the dyadic value co-creation process of complex offerings. AND to examine the roles performed and resources contributed by suppliers and customers within the joint value generating process.

METHODOLOGY:

Empirical study, extensive qualitative interviews with both suppliers and buyers of KIBS, analyzing the activities, roles and resources of buyers and suppliers in the reciprocal value co-creation process.

DISCUSSION:

Proposed an empirical grounded framework which presents a dyadic problem solving process through which value co-creation occurs in KIBS industry. This study increases understanding of the roles played and resources contributed by suppliers and customers to co-create value.



IMPLICATIONS AND GAPS:

Managers can employ the proposed frame- work to analyze their capabilities, processes, and operating procedures at each stage of the joint problem solving process, in order to identify potential targets for development, and to optimize their roles and re- source contributions.

This research suggests that suppliers of complex offerings should pay more attention to co-clarifying the value-in-use that is the goal of the exchange, to drawing out customers' hidden resources, and to guiding customers to participate in the process, because customer resources are pivotal to successful outcomes but potentially difficult to harness.

Customers and buyers of complex offerings should not neglect their responsibilities in collaborative problem solving, because by sharing information on their needs and use context,

and by integrating their applicable resources, such as industry expertise and extant production materials, they can enhance the construction of feasible solutions that generate greater value-in-use. Further research could investigate the dimensions that distinguish objects of exchange in terms of characteristics of value creation processes. Many roles identified in this research merit further examination; e.g. how co-marketers play their roles, or how parties' roles vary from equal partners to dominators and followers in different contexts. Finally, not only is value dyadic, but also network actors impact value creation (Lindgreen &Wynstra, 2005), and thus the exploration of joint problem solving for value between network actors could provide interesting multi actor perspectives in future research.

AUTHOR: (Prahalad & Ramaswamy, 2004b)
TITLE: Co-creation experiences: The next practice in value creation
OBJECTIVES: Definition of value and value co-creation process from firm-centric to consumer-centric. Introducing DART model, the building blocks of co-creation The change within the market; from passive to active at where consumers have more conversation and interaction with firms
METHODOLOGY: Theoretical study
DISCUSSION: Proposing building blocks of co-creation which needs high attention for the firms before initiating this initiative

IMPLICATIONS AND GAPS: Companies need to understand the change in market and believe the differences. The interaction becomes the locus of value creation Companies need to employ the building blocks of co-creation activity, the "DART" model by which Dialogue, Access, Risk and Transparency are the elements.

AUTHOR: (Feick & Price, 1987)
TITLE: The Market Maven: A Diffuser of Marketplace Information
OBJECTIVES: Developing a term "market maven" as those individuals who have information about many kinds of products, places to shop, sales and other facets of market. They initiate discussion and respond to further questions.
METHODOLOGY: Quantitative empirical study, developing questionnaire sending to households
DISCUSSION: It is shown that market mavens are distinct from opinion leaders and early purchasers. It is suggested that consumers are able to distinguish market mavens and use them in their making decisions for buying products; they can distinguish them from people with product-expertise. These individuals tend to read customer reviews, participation in market activities, couponing, reading advertisements and so on. Their involvement with a market is one reason for their attitude.
IMPLICATIONS AND GAPS: It is suggested by prior literatures that the best prospect for targeting marketing communication about new products is the consumer who buys early and who also influences others decision for buying. By targeting these users, manufacturers can increase their initial sale and obtaining rapid information diffusion in market. Although these users are important when marketer is interested into the diffusion of product into the market, they are able to communicate further information

such as price changes, new store, availability of product etc., therefore market maven with such characteristics explored in the study are preferred to be good targets for general messages about market mix changes, messages spanning multiple product classes. Market mavens might be especially important to retailers as they often attempt to communicate information about a large assortment of goods. Since no clear demographic profile of the maven is evident from this study, future research needs to provide greater insights into the kind of information transmitted by the maven, the frequency of such transmission, or other means of profiling mavens that do not rely on demographic data. A reexamination on developing better measures for discriminating influencers who are generalist from influencers who are specialist, examining the motivations for information exchange that are not based on product involvement or experience, developing better ways to examine the relationship between types of influencers.

AUTHOR: (Füller, 2010)
TITLE: Refining Virtual Co-Creation from a Consumer Perspective.
OBJECTIVES: To explore what consumers expect from virtual co-creation projects and how consumers' motivations and personalities influence those expectations.
METHODOLOGY: Empirical study, online surveying from those who had participated in virtual co-creation activities before (Users were extracted from 10 co-creation projects). Consumers' demographics, domain-specific skills, involvement in innovation tasks, internet-specific innovation task involvement, innovativeness, adaption behavior, product-specific novelty seeking, internet-specific exploratory behavior, web usage, and previous innovation activity were applied for consumers' characteristics in addition to their motives.

DISCUSSION:

It is revealed that, four different kinds of consumers engaging in co-creation: reward-oriented, need- driven, driven, curiosity-driven, and intrinsically interested.

The results further confirm that differently motivated consumers significantly differ in their personality. For example, while curiosity-driven consumers seem to be inexperienced web surfers who are not very interested in offline innovation activities, reward-driven consumers seem to be highly skilled problem solvers, considering themselves almost as professional contributors. Intrinsically interested consumers not only show the highest motivation, but also are highly qualified due to their knowledgeable and creative personality. In other words, consumers who are more creative (and, as a consequence, are more qualified for co-creation activities) are also more interested in co-creation projects. The identified self-selection bias of creative consumers explains why signaling and problem broadcasting seem to be adequate strategies to recruit qualified participants for co-creation projects.

Reward-Oriented Participant	Intrinsically Interested Participant
• highly skilled • likes to solve problems and fiddle around • late adopters: wait till a new product has shown proof before s/he is convinced to buy it • moderate interest in virtual NPD • moderate web usage • previously innovated new or modified existing product and further advanced them	• early adopter • high exploratory behavior, novelty seeker • high innovativeness • highly skilled • likes to fiddle around and solve problems • high interest in virtual NPD • more previous innovation activities in all development stages
Curiosity-Driven Participant	**Need-Driven Participant**
• little web usage • little previous innovation activity • moderate to low exploratory and novelty seeking behavior • high Internet specific task involvement • early majority in product adaptation	• low in domain-specific skills and innovativeness • moderate to low exploratory or novelty seeking behavior • moderate web usage • well educated

IMPLICATIONS AND GAPS: Depending on the input a company is looking for, for example, problems with an existing product, ideas for new ones, or opinions about new concepts, it may aim to cooperate with one or several of the identified consumer types and tailor the co-creation experience towards them. Ideally, the design of a virtual co-creation platform should be able to attract all envisaged consumer groups and to meet or even exceed their expectations. Also, expectations towards co-creation slightly vary between differently motivated consumer groups, some general strategies regarding tasks offered, incentives, context, and interaction partners can be given. By providing different co-creative tasks and different levels of support to the participant, companies can virtually collaborate with individuals from different groups with different skills (professional innovators and hobbyists).

AUTHOR: (Hoffman et al., 2009)
TITLE: The "Right" Consumers for Better Concepts: Identifying and Using Consumers High in Emergent Nature to Further Develop New Product Concepts
OBJECTIVES: To define and explore the users high in emergent nature. Authors believe that they are the right consumers to use for new product concept development and they possess a unique capability to imagine or envision how concepts might be developed so that they will be successful in the mainstream marketplace.
METHODOLOGY: Empirical study, online survey, set of measures for lead userness and emergent nature were developed and tested. Domain specific lead user, dispositional innovativeness, rational and experiential thinking style, optimism, reflection etc. were used to understand if these traits fit better to users high in emergent nature and comparing to lead userness. Two product categories used.

DISCUSSION:

1- This study distinguished the emergent nature construct from domain-specific lead user status and the dispositional innovativeness trait, as well as related personality traits and information processing styles like openness to new experiences, reflection, verbal and visual processing styles, experiential and rational thinking styles, creativity and optimism.
2- we used our emergent nature scale to test the prediction that product concepts further developed by the "right" consumers, those high on emergent nature, would be found significantly more appealing (and have a higher purchase likelihood) by mainstream consumers compared to concepts developed by lead users, consumers high on dispositional innovativeness and average consumers. The results supported our predictions and established the predictive validity of the emergent nature construct.
3- Consumers high in emergent nature may have the tendency to emphasize utilitarian attributes in their improved product concepts, compared to high lead users.
4- The essence of our conceptualization of emergent nature is that consumers so possessed are able to imagine or visualize new product concepts that may best fit typical consumers' needs and correspondingly inform their experiential impressions and associations with evaluative judgments and vice versa.

IMPLICATIONS AND GAPS:

From a managerial perspective, concepts developed by consumers high in emergent nature may have a higher likelihood of ultimate success with mainstream customers. The results also give direction to firms striving to adopt a positive orientation toward emergent customer segments but less clear about how they can identify such customers.

As a limitation of study, it would be important to show that actual products based on concepts developed by consumers high in emergent nature are ultimately found more appealing and lead to greater sales, compared to those developed by other types of consumers. A related limitation is that the studies were performed in laboratory settings. As our main aims were to demonstrate that emergent nature can be reliably and validly measured and that concepts developed by consumers high in emergent nature would appeal most to typical consumers, laboratory settings are appropriate for this first demonstration. Nonetheless, future research should seek to replicate our results in multiple and diverse field settings.

AUTHOR: (Hoyer et al., 2010)

TITLE: Consumer Cocreation in New Product Development

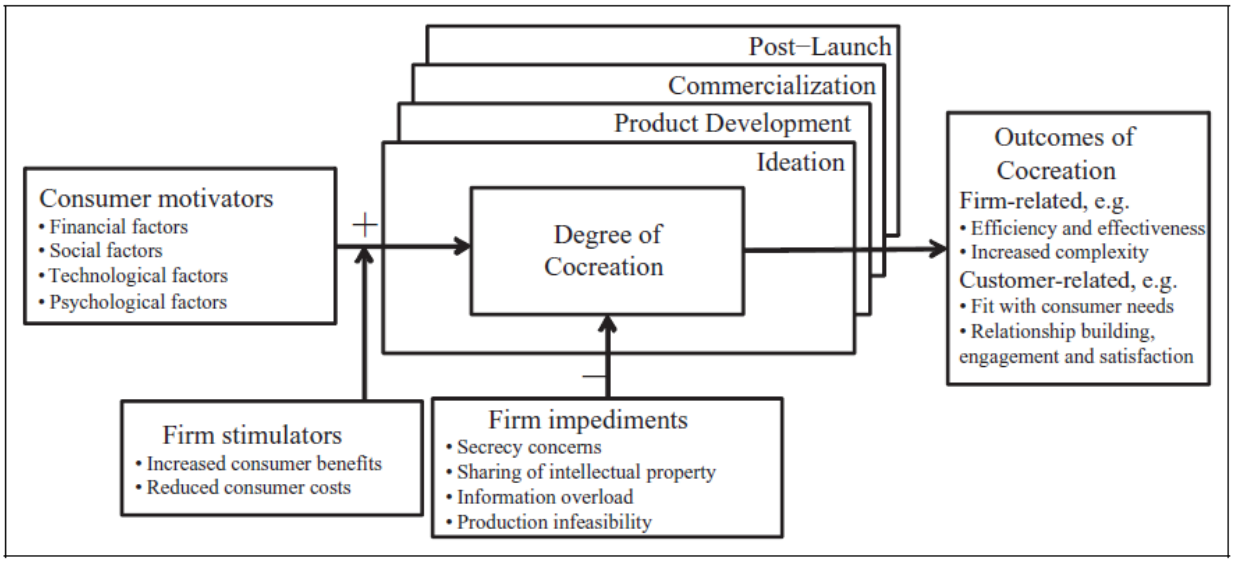
OBJECTIVES:

To examine: (a) the major stimulators and impediments to consumer co-creation in NPD, (b) the impact of co-creation at each stage of the NPD process, and (c) the various firm-related and consumer-related outcomes.

METHODOLOGY: Theoretical

DISCUSSION:

To propose and discuss consumer motivators, firms stimulators and firm impediments which all affect the degree of co-creation and finally will have impacts on the outcomes of co-creation.



IMPLICATIONS AND GAPS:

More research is needed on typologies of cocreators that are specifically tailored to cocreation. Despite what we know about consumer segments such as innovators, lead users, emergent consumers, and market mavens, the relative attractiveness of targeting each of these (or other) consumer segments in each stage of cocreation is a fruitful area for further research. Firms need to understand which consumers and consumer segments have the highest potential for

cocreation. Again, we need a better understanding of needs, wants, preferences, and the motivation of different segments of cocreating consumers. Research should reveal when consumers are motivated to engage in and appreciate cocreation and when they are not. Longitudinal studies are needed to reveal how the cost- benefit trade-off evolves over time within a relationship with a consumer.

AUTHOR: (Kristensson et al., 2004)
TITLE: Harnessing the creative potential among users
OBJECTIVES: To examine the benefit of involving users (Advanced and ordinary users, professional product developers) in suggesting new product ideas in an innovation project.
METHODOLOGY: Quasi-experimental three group (Advance, Ordinary, Professional developer) on mobile telephony services, four stages of research developed: startup, idea generation, termination and evaluation.
DISCUSSION: Three main results were driven from the research: (1) Ordinary users produced more original new service ideas, indicating a more divergent style of thinking. (2) Ordinary users produced ideas that were assessed as significantly more valuable. (3) Professional developers produced the most realizable ideas, together with the advanced users.

IMPLICATIONS AND GAPS:
By involving (ordinary) users to suggest new product ideas that seem unthinkable in advance, market researchers and consumer psychologists can avoid the common dilemma of seeking to understand consumer behavior in a retrospective manner instead of looking to the future. From a managerial point of view, it therefore is suggested that companies in need of original, customized ideas for future products should involve their users in the creative phase of their innovation process. Limitation of the present study concerns the trade-off between external and internal validity. Some users, for example, may be motivated extrinsically by being given a mobile phone with no user charges, while others may be motivated intrinsically by the fact that they are given the opportunity to share their ideas and perhaps influence the services of tomorrow.

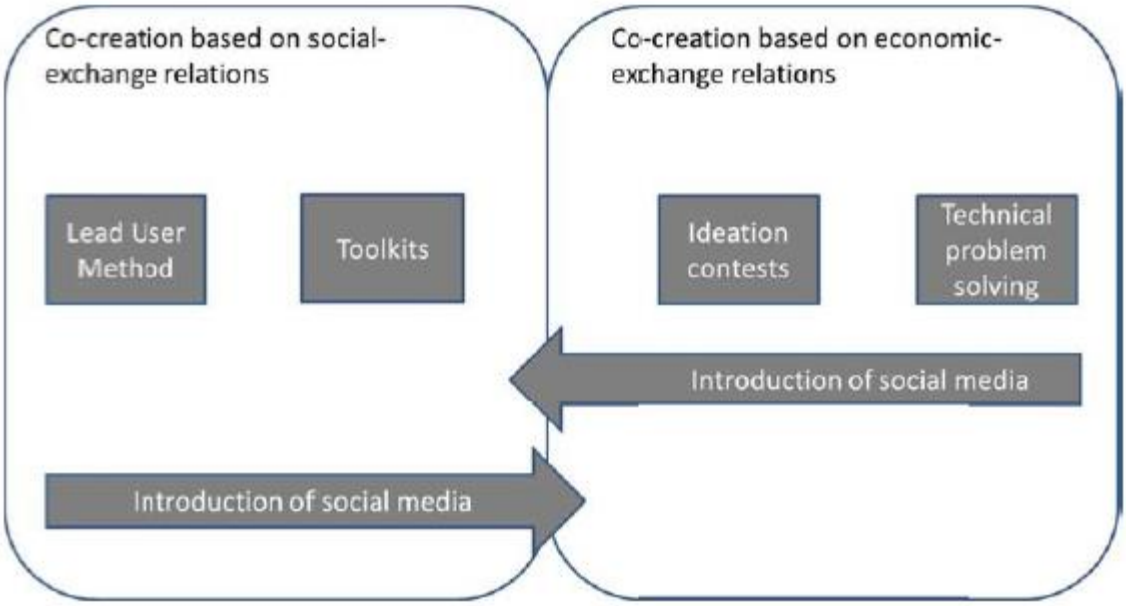
AUTHOR: (Magnusson, 2009)
TITLE: Exploring the Contributions of Involving Ordinary Users in Ideation of Technology-Based Services
OBJECTIVES: To contribute to scholarly knowledge regarding the benefits and management of user involvement during the ideation phase of innovation in technology-based services. More specifically, the study investigates the contribution made in this respect by ‘‘ordinary’’ users, as opposed to professional developers.
METHODOLOGY: Quasi-experimental design with three scenarios of different users’ involvement. Originality, producibility and user value were measured for the different participants. Four stages of experiment procedure: 1- initiation 2- idea creation 3-delivery 4- evaluation

DISCUSSION: The study finds that the users' knowledge of the underlying technology has an effect on their propensity to contribute with incremental or radical new ideas. The ideas from guided users tend to be more incremental whereas the pioneering users' ideas are more radical. Contrary to the users in the guided user scenarios, the users in the pioneering user scenarios have a propensity to produce ideas that challenge the prevailing dominant logic of the company; these ideas can be used to assist the company to think in new trajectories. The paper proposes that ordinary users should not be expected to contribute ideas that can be directly put into the new product development process; rather, ordinary user involvement should be regarded as a process whereby a company learns about users' needs and is inspired to innovate.
IMPLICATIONS AND GAPS: The study finds that the users' knowledge of the underlying technology affects the users' propensity to contribute incremental and/or radical new ideas. If the objective is to obtain a greater number of feasible suggestions, managers should teach the users more about the underlying technology, that is, a guided users approach. On the other hand, if the company is aiming for more radical innovation, a pioneering approach is preferable.

AUTHOR: (F. Piller et al., 2012)
TITLE: From Social Media to Social Product Development : The Impact of Social Media on Co-Creation of Innovation
OBJECTIVES: To discuss the impact of social media on customer co-creation in the innovation process. To complement this anecdotal evidence with a theoretic perspective that can explain the impact of social media on co-creation.
METHODOLOGY: Theoretical

DISCUSSION:

They provided a conceptual, theoretical based model for the impact of social media in innovation processes based on customer co-creation. Social media may enhance the effectiveness and the efficiency of co-creation by lowering the cost of interaction among participants and by allowing a larger number of participants to contribute to a particular co-creation initiative, hence enhancing the heterogeneity of knowledge stocks in the participant community, a core factor of success in innovation management.



IMPLICATIONS AND GAPS:

Beyond the application of social media for co-creation, also the different methods of co-creation per se still offer plenty of opportunities for further research.

First, firms need information and better guidance on how to assess if their organization and branch is suited for customer co-creation. This information is crucial in order to build specific competences that aid firms at identifying opportunities and ultimately at using the right method. Managers need a clear picture of their own organizational settings and capabilities before being able to answer important questions during the implementation of one's own customer integration initiative.

Secondly, previous research focused on showing the application of customer co-creation, mostly in terms of successful examples. These examples are valuable for creating evidence and

generating attention for the phenomena, but often lack a differentiated perspective on the chosen co-creation method. To bring the discussion on methods to the next level, more research on specific design components of these methods are mandatory in order to provide information how the method is used in the best way. Research is also needed on the long-term effects of customer co-creation on competition.

AUTHOR: (F. Piller & Walcher, 2006)
TITLE: Toolkits for idea competitions: a novel method to integrate users in new product development
OBJECTIVES: To discuss a novel way for manufacturers to organize such a user innovation process: internet-based toolkits for idea competitions. To explore the design and implementation of a TIC as a method for NPD and to evaluate its performance.
METHODOLOGY: Empirical study with exploratory interview with the core members of Adidas NPD team and launched a TIC for Adidas shoes. User ideas were evaluated by a company expert panel following Consensual Assessment Technique (CAT).
DISCUSSION: Adidas' management was very satisfied with the quality of the submissions in general, and rather enthusiastic about the winning ideas. Two of them are presently in the state of implementation. Winning users were invited to participate at sub- sequent (conventional) lead user workshops, generating even more innovative output. Overall, the willingness of customers to participate was surprisingly high. This could be explained by high involvement, brand awareness, and demand for peer recognition by the participating users. For Adidas, a continuous implementation of a TIC could thus become a tool supporting NPD while deepening the relationship with its customers at the same time, a marketer's dream.

This study explored the capabilities of idea competitions as a supplementary means to identify lead users by screening or pyramiding. Idea competitions are often faster and less expensive compared with screening lead users from a large sample, which demands the development of a context specific scale and measurement instrument and surveying potential participants.

IMPLICATIONS AND GAPS:

Firms have to establish more formal organizational structures supporting this practice. From discussions with Adidas' management we conclude that internal change management and cross-functional acceptance to make user innovation a permanent part of NPD will strongly influence the long-term success of this initiative and its scalability. An open innovation system consists not only of platforms like toolkits for user innovation, but demands adequate organizational values, norms, and rules.

Another point demanding further consideration from management and researchers alike is TIC usability. Research has only recently begun to study usability and interaction methods of conventional toolkits for user innovation and co-design. The performance of an idea competition may be significantly influenced by the design of the TIC's user interface, the procedure of idea formulation, features for collaborative idea creation, and so on.

As a limitation of our study, further research could also replicate the selection process by other lead user identification mechanisms (for e.g., perform an initial screening of users, and then invite identified users to participate in an idea competition).

Another limitation is the use of CAT to evaluate the quality of user submissions; the evaluation board did not include external experts. Evaluators from the organization initiating the competition may be biased by company culture.

AUTHOR: (Prugl & Schreier, 2006)

TITLE: Learning from leading-edge customers at The Sims: opening up the innovation process using toolkits

OBJECTIVES:

The aim of this empirical study is to extend the knowledge of how users deal with 'the invitation to innovate' and how attractive individual user designs might be to other users.

METHODOLOGY:

Empirical exploratory study, online surveying the users of a computer game "The Sims".

Two step approach, first checking insights and second submitting the questionnaire which consisted of three parts to discover the issues. First part covered the users' file creation history, second part dealt with the types of file created and third part was related to availability and relevance of users' output.

DISCUSSION:

Most important finding was that an individual's output might be beneficial to other users as well. Specific innovative solutions created by certain users are highly diffused among The Sims online communities. Furthermore, we find that leading-edge users do not confine themselves to using official toolkits but also employ user-created tools to meet their specific needs

IMPLICATIONS AND GAPS:

Threefold implications:

1- One toolkit may not serve all users effectively.
2- User-created objects might be a valuable source of market research data.
3- Certain leading-edge users might be identified easily and subsequently integrated into more radical new product development projects.

Thus, different types of users employ different types of tools, which in turn lead to different types of innovation activities.

Although practical cases of companies employing the toolkit approach are growing in number, scholarly knowledge related to the implications of this open innovation model are still rather limited.

AUTHOR: (Von Hippel & Katz, 2002)
TITLE: Shifting Innovation to Users via Toolkits Shifting Innovation to Users via Toolkits
OBJECTIVES: To explore toolkits for user innovation and explain why and how they work. Furthermore, discussing the relationship of toolkits for user innovation to other development methods, and where they can be most effectively applied.
METHODOLOGY: Theoretical
DISCUSSION: Toolkits for user innovation will eventually be adopted by many manufacturers facing heterogeneous customer demand. As toolkits are more generally adopted, the organization of innovation- related tasks seen today especially in the field of custom integrated circuit production will spread, and users will increasingly be able to get exactly the products and services they want, by designing them for themselves.
IMPLICATIONS AND GAPS: Toolkits can impact existing business models in a field in ways that may or may not be to manufacturers' competitive advantage in the longer run. A switch to user-based customization via tool- kits can affect their ability to do this over the long term. Thus, a manufacturer that is early in introducing a toolkit approach to custom product or service design may initially gain an advantage by tying that toolkit to his particular production facility. However, when toolsets are made available to customer designers, this tie often weakens over time. Customers and independent tool developers can eventually learn to design toolkits applicable to the processes of several manufacturers. If any manufacturer introduces the toolkits approach into a field favoring its use, customers will tend to migrate to it, forcing competitors to follow. Therefore, a firm's only real choice in a field where conditions are favorable to the introduction of toolkits is the choice of leading or following.

Demographic results

Sex

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	162	29.9	29.9	29.9
	Male	379	70.1	70.1	100.0
	Total	541	100.0	100.0	

Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 20	11	2.0	2.0	2.0
	21-30	409	75.6	75.6	77.6
	31-40	94	17.4	17.4	95.0
	41-50	17	3.1	3.1	98.2
	Over 50	10	1.8	1.8	100.0
	Total	541	100.0	100.0	

Education

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	2	.4	.4	.4
	Diploma	18	3.3	3.4	3.8
	Bachelor degree	132	24.4	24.8	28.6
	Master degree	316	58.4	59.4	88.0
	PhD/MBA	64	11.8	12.0	100.0
	Total	532	98.3	100.0	
Missing	System	9	1.7		
Total		541	100.0		

Nationality

Nationality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-	1	.2	.2	.2
	American	9	1.7	1.7	1.8
	Argentina	2	.4	.4	2.2
	Azerbaijanian	1	.2	.2	2.4
	Bangladesh	1	.2	.2	2.6
	Brazilian	1	.2	.2	2.8
	British	3	.6	.6	3.3
	CAMEROONIAN	1	.2	.2	3.5
	Canadian	2	.4	.4	3.9
	Chinese	4	.7	.7	4.6
	Colombian	10	1.8	1.8	6.5
	Croatian	1	.2	.2	6.7
	Dominican	1	.2	.2	6.8
	Dutch	4	.7	.7	7.6
	Egyptian	7	1.3	1.3	8.9
	EU	1	.2	.2	9.1
	French	2	.4	.4	9.4
	German	2	.4	.4	9.8
	Gondor	1	.2	.2	10.0
	Greek	1	.2	.2	10.2
	Indian	10	1.8	1.8	12.0
	Iranian	421	77.8	77.8	89.8
	Iranian British	1	.2	.2	90.0
	Iranian Canadian	1	.2	.2	90.2
	Iranian-British	1	.2	.2	90.4
	Iranian/Candian	1	.2	.2	90.6
	Italian	16	3.0	3.0	93.5
	Lebanese	1	.2	.2	93.7
	Macedonian	2	.4	.4	94.1
	Pakistani	2	.4	.4	94.5
	Polish	1	.2	.2	94.6
	Portuguese	7	1.3	1.3	95.9
	Prefer not to declare	1	.2	.2	96.1
	Russian	5	.9	.9	97.0
	Rwanda	1	.2	.2	97.2
	Scottish	1	.2	.2	97.4
	South African	1	.2	.2	97.6
	Spanish	1	.2	.2	97.8
	Syrian	1	.2	.2	98.0
	trinidad and tobago	1	.2	.2	98.2
	Turkish	9	1.7	1.7	99.8
	Vietnam	1	.2	.2	100.0
	Total	541	100.0	100.0	