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LAG-USER METHOD: USING LAGGARDS TO LEVERAGE USER INNOVATION

Sara F. Jahanmir
Luis Filipe Lages

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* Sara F. Jahanmir

** Luis Filipe Lages

* Sara F. Jahanmir, Nova School of Business and Economics, Universidade Nova de Lisboa, Faculdade de Economia, Campus de Campolide, 1099-032 Lisboa, Portugal.
   Phone: ++ 351.21.3801.600, sarajahanmir2012@novasbe.pt

** Luis Filipe Lages, Nova School of Business and Economics, Universidade Nova de Lisboa, Faculdade de Economia, Campus de Campolide, 1099-032 Lisboa, Portugal.

   Phone: ++ 351.21.3801.600, lflages@novasbe.pt, http://www.lflages.com

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Abstract

Laggards are the last users to adopt a product. Prior literature on user-led innovation ignores laggards' impact on innovation. In this paper, we develop the Lag-User Method, through which laggards can generate new ideas. Through six studies with 62 teams in three countries, we apply the method to different technologies and services and present our findings to executives to get managerial insights. Findings reveal that laggards who generate new ideas (lag-users) have different perceptions of user-friendly products and different unfulfilled needs. They prefer simple products. We propose that by involving lag-users in NPD, firms can improve the effectiveness of NPD.

Keywords: user innovation, laggard, lag- user, simplicity, resistance to innovation, NPD, method, diffusion of innovation

1. Introduction

The innovation literature differentiates between user-dominated and manufacturer-dominated innovation. User-dominated innovation occurs if all tasks prior to manufacturing and commercializing the innovation have been accomplished by the user. Manufacturer-dominated innovation occurs when communicating the need is the only contribution of the user to the innovation process and the rest is taken over by manufacturer (von Hippel, 1976).

The vast range of literature exploring the topic of user-led innovations (e.g. Baldwin & von Hippel, 2011; Bogers, Afuah & Bastian, 2010; Franke & Shah, 2003; Lüthje, Herstatt & von Hippel, 2002; Morrison, Roberts & von Hippel, 2000) and the variety of industries interested (e.g. scientific instruments, electronic technology, high technology, industrial products, services, and many others) confirm the key role of users in new product and service development (Alam, 2002; Hoyer et al., 2010).

Findings of research on new product development show that among different industries, an average of 40% of all new products fails (e.g. Crawford and Di Benedetto, 2008; Hienerth & Lettl, 2011). Research suggests that successful innovations come to life outside the firms (e.g., Baron and Shane, 2008; Hienerth & Lettl, 2011) and argues that co-creation creates value, as the users' role changes from a "passive audience to active player" (Payne et al., 2009: 380). Therefore, products developed by users tend to have a higher commercial value than those developed by manufacturers (Franke, von Hippel & Schreier, 2006; von Hippel, 1976). Thus an accurate understanding of users' needs is a critical difference between commercially successful innovations and those which fail (von Hippel, 1976).

Recent literature defends that although users are not expected to compete with professionals (e.g. marketeers, engineers and/or designers), they might constitute a very useful complementary means of idea generation (Poetz & Schreier, 2012). In comparison with traditional new product development methods, users' inputs result in products with higher commercial value (Griffin & Belliveau, 1997; Lilien et al., 2002; Urban & von Hippel, 1988). Poetz & Schreier (2012) also demonstrate that "user ideas clearly score higher on average in terms of novelty and customer benefit" than ideas developed by engineers or marketers. Lettl,

Herstatt and Gemuenden (2006) defend that manufacturers can benefit from the users significantly, for example through consumers' contribution to innovation outcome (Frank, von Hippel and Schreier, 2006; Mahr, Lievens & Blazevic, 2013), their ability to come up with innovative and commercially valid ideas (Ogawa and Piller, 2006; Poetz and Schreier, 2012), to develop greater product variety and product lines (Al-Zu'bi and Tsinopoulos, 2012; Lilien et al., 2002), and finally to contribute to market performance (Baldwin, Hienerth and von Hippel, 2006; Hienerth, 2006; Nishikawa, Schreier and Ogawa, 2013). Thus, consumers are believed to add valuable insights to firm's new product development process (NPD). Users' involvement in NPD process can result in more user-acceptable outcomes (Foster & Franz, 1999), reduce NPD costs and their empowerment can create a promising positioning strategy that gives firms competitive advantage in the market place (Fuchs and Schreier, 2011; Mahr, Lievens & Blazevic, 2013) . Higher consumer involvement results in customer satisfaction and loyalty towards the firm (Ind, Eglesias and Shultz, 2013) as well as emotional bounding, trust and commitment (Brodie et al., 2011). Homburg and Kuehnl (2013) suggest a U-shaped relationship between customer integration and new product performance and emphasize on selecting the right set of users to involve in the process of innovation (Lettl, 2007). Thus the first critical question that researchers and firms should answer is which users should be involved in firms' idea generation and NPD process?

Despite the significant amount of research on user-led innovation in the last decades, prior literature shares a key limitation: it does not explore laggards' impact on innovation. Laggards are the last to adopt a product. They are past oriented, tradition bound and suspicious of new products. Moreover, laggards are believed to be reluctant to change (Rogers, 2003; Moore, 2006). Researchers do not agree on the total percentage of users who are laggards. For example, while Rogers (2003) diffusion of innovation curve defends that 16% of the users are laggards, Mahajan et al. (1990) estimate laggards to be 21.9% of the users. Nevertheless, we believe that ignoring the input of 16-22% of the users is something that todays' companies cannot afford.

Moreover, firms who merely focus on mainstream customers tend to be less innovative than those who also consider emerging customers (Govindarajan, Kopalle & Danneels, 2011) and fail to develop simple solutions (Christensen & Bower, 1996). Additionally, there is empirical evidence that laggards could become innovators in certain cases. Many users with a normal PC (or even without a PC, e.g. older generation) skipped upgrading to a laptop and moved directly to buy a tablet. Due to leapfrogging effect, laggards of one product (e.g. iPhone 3) might skip the next generation (iPhone 4) and become innovators for the latest generation of a product (e.g. iPhone 5s). Assuming that laggards are around 16% of the users, if 1% of laggards leapfrogged, a company's average profits could increase by 14% (Goldenberg and Oreg, 2007).
Research also shows that laggards are more brand loyal than other users (Uhl et al 1970). As such, if companies are able to develop products or services that fulfil laggards' needs, they will be able to retain these users for a longer period than other user categories. Above all, costs of user-innovation are significantly less than costs of manufacturer's innovation, as users are willing to share their innovation for free (Franke and Shah, 2003).
In this paper, we propose that a new challenge in research and business should be to involve laggards in the NPD process, allow them to innovate and use them as a rich source of idea generation. This paper is based on empirical material from six different studies, which provide us with rich data from laggards, who generate new ideas, from now on lag-users. Findings also include results of interviews with executives and focus groups.

2. Methodology

2.1. Lag-User Method

This new method was inspired by the existing lead-user literature, modified and purified through an exploratory study, and later tested on new samples. The Lag-User Method consists of five steps (zero to four). In line with the most recent literature in innovation and new product development (e.g., Lakshmanan & Krishnan 2011; Viswanathan & Sridharan 2012; Ziamou, Gould, & Venkatesh, 2012) we used university students to collect data for all the studies presented in here. We select our sample as groups of MBA or master students in a friendly atmosphere with a shared enthusiasm for the discussed topic, "whose members engage jointly in group actions to accomplish collective goals and/or to express mutual sentiments and commitments" (Bagozzi & Dholakia, 2006:45). Research shows that peer input has a positive impact on delivered solution (Franke, Keinz & Schreier, 2008) and fosters creativity (Chenag and Yang, 2014). Moreover, working with peers and receiving their valuable feedback can facilitate the process of NPD (Hienerth & Lettl, 2011). Therefore, for this paper, the participants worked in groups.

Below we present a very brief summary of each step.

Step Zero: Break the Ice (Group)
In step zero participants are asked to think about an object that they use on a regular basis, identify problems in that product and then come up with solutions to solve each problem. This will help participants to break the ice and "warm up their brains" namely by starting questioning existing practices and presenting possible alternatives.
Step one: Identify Products (Individual)
In the first step, after an introduction to Rogers' Diffusion of Innovation Curve and adopter categories, participants are asked to work individually and make a list of five goods or services for which they consider themselves to be laggards. Then they write down the specific reasons why each identifies her-/himself as a laggard. Groups will be made based on the product lists (e.g. participants who are laggards for smartphones will be working in the same group).
Step two: Discussion (Group)
In step two, participants are informed which product they will work on in the following steps, followed by an explanation that from this step on, they will focus on that single product. In each study we tried to focus on different samples of products and/or services.
Having been informed about the assigned product, participants answer following questions, considering three units of analysis: market, product and themselves as consumers:
1. From your point of view what are the important emerging trends regarding this product (PESTEL analysis)? (market)
2. What are your specific needs that this product does not fulfill? (you)
3. Which available alternative products can you think of? (product)
Step Three: Developing the new product (Group)
In this step, participants are asked to work in their groups and start developing the new product. This step is composed of three sections.
3a: Developing a solution driven mindset: Participants are asked to focus on top five common and recurring needs and/or problems of their product. They are then asked to identify at least one opportunity for each problem and identify one or more limitations to achieve that opportunity.
3b: Design your dream product: participants are asked to determine how general ideas could be applied to create solutions. They are expected to define ideal attributes for their new product and justify why they think those attributes are ideal.

3c: Execution: In this section, while creating solutions, participants identify three inputs: need, expected form and shape, and finally the technology or service used to create the solution. At this stage they apply the SCAMPER technique (Substitute, Combine, Adopt, Modify, Put, Eliminate, Reverse or Rearrange) (Eberle, 1996) and create a prototype.

Step Four: Conclusion

In the final step, participants present their prototypes, discuss takeaways from the project and share lessons learned with other participants.

2.2. Exploratory Study: Refining the Research Instrument

In our exploratory study we describe the development and refinement of the Lag-User Method. The method was developed during a 2.5 day seminar in France and was simultaneously tested on our first exploratory sample.

2.2.1. Participants and Procedure of Exploratory Study

Our exploratory sample consisted of 22 students, attending a seminar for course credit at a major Business School in France. Students were divided into eight groups of 2 to 3 participants. With exception of four, all participants were French. Demographically, participants ranged in age from 20 to 29 and had an average age of 23. 32% were female and 68% were male. Participants had a complete understanding of the difference between a laggard and a non-user (average of 4.7, range 1-5) as well as the definition of a laggard (average 4.4, range 1-5). Individuals appeared to have significant interest in the subject (average of 4.3, range 1-5) and believed that the quality of the seminar content addressing this methodology was high (average of 4.0, range 1-5). Collectively, this indicates that the sample is reliable and appropriate for this study.

2.2.2. Major Findings and Conclusion of Exploratory Study

Despite being a first attempt, the methodology used in the exploratory study revealed to be effective. During our exploratory study we found out that after coaching and guiding them through a systematic method, laggards were able to question existing assumptions, innovate, and suggest prototypes for the future generation of products or services. During this process, participants need to be coached and guided through each step, while having sufficient time to arrive to a prototype. Our exploratory study also proved the value of crowdsourcing (Poetz and Schreier, 2012) and revealed that working in mixed teams and the crowdsourcing process resulted in novel ideas. Moreover, this study showed that while working in mixed groups and using the input from laggards, participants tended to develop really new or incremental innovation (Table 1, Garcia and Calantone, 2002).

====Insert table 1 about here=====

2.3. Study One: Comparing Innovators and Laggards as a Source of Innovation

Based on findings and results of our exploratory study, we improved the method for study one, where we applied the Lag-User Method to a new sample. This second study has two main purposes: a) to validate the Lag-User Method; b) to analyze to what extent the insights provided by laggards might (not) be as useful as the insights provided by innovators.

2.3.1. Participants and Procedure of Study One

The sample of study one consisted of 31 MBA students attending a seminar in a leading business school in Cyprus. Students were divided into 15 groups of 2 participants and one control group with a single member who did not follow the methodology systematically. With exception of six, all participants were Cypriots (three Russians, one from Poland, one from Nigeria and one from the UK). Demographically, the participants ranged in age from 25 to 50 and had an average age of 31. In this study, 55% were female and 45% were male. In

average, participants had seven years of professional experience. Participants had a very good understanding of the difference between a laggard and a non-user (average of 4.5, range 1-5) as well as the definition of a laggard (average 4.5, range 1-5). Individuals appeared to have significant interest in the subject (average of 4.0, range 1-5) and believed that the quality of the seminar content addressing this methodology was high (average of 4.1, range 1-5). Collectively, this indicates that the sample is reliable and appropriate for this study.

2.3.2. Results of Study One

In study one, we had 15 groups (8 Innovators, 7 Lag-Users) and an individual used as a control, without introduction to the topic. Participants worked on a variety of products, from social media and online services to fashion products, cosmetic products, kitchen equipment, smartphones, smart phones and laptops. An interesting observation of this study was several examples of participants being innovators for one technology and laggards for another, e.g. innovator for e-books, laggard for social media (e.g. Facebook) or innovator for cameras and laggards for smartphones. Some major reasons participants mentioned for being innovators were the need to be the first to have a certain product, certain product features, convenience, value for money, employer's interest and motivation. Laggards had often different, but occasionally also the same reasons, e.g. value for money (after product price falls down), product features, lack of need or interest, lack of financial resources, social pressure to use a product (e.g. "All my family is using online banking, so I had to." Or "All my friends are on Facebook, so I had to join Facebook too."), and finally fear of product failure, i.e. recognizing the value only after using the product.

As we intended to find out what the two extremes, namely innovators and laggards, think about the same product, we built parallel groups for each user category. Among others, we had four groups working on laptops (two laggard groups and two innovator groups) or three groups working on mobile phones (two laggard and one innovator group). Although each participant had two lists of product (innovator and laggard lists), they could only join one team (table 2).

====Insert table 2 about here=====

Among others, we found out that innovators and laggards have different perceptions of user-friendly products as well as different needs and expectations. For example while innovators miss extra features in a smartphone, laggards seek a simple phone which offers a customized solution to their specific needs. More specifically, this study showed that while innovators identified more sophisticated needs and problems (e.g. more options on laptops or more applications for smart-phones) laggards seek simplicity and convenience (e.g. less programs on a laptop, simplified iPhone). However, we found out that at some points both had common needs, e.g. considering laptops, both innovators and laggards mentioned higher battery life, light weight and computability with other devices as their major needs.

Problems that laggards identified were mainly technological complexity, customization to their simple needs (e.g. cheap and simple smartphones or less complicated laptops) and willingness to allocate financial resources. Innovators on the other hand needed other kinds of improvements in products, e.g. laptops with touchpads instead of keyboards, waterproof smartphones or a new iPhone which does not break in case it drops.

In order to enrich the discussions in the final step and compare the ideas generated by lag-users with those generated by innovators, we asked each group to prepare an elevator pitch to present their new idea to other groups. To evaluate the market potential of products developed by lag-users as well as products developed by innovators, each participant was given the same amount of monopoly cash (a note of 500€, one of 200€, one of 100€ and one

of 50€) to invest individually as a Business Angel in his/her top 4 groups (one note per group). Participants were not allowed to invest in their own groups. To make sure that this is not the case, each participant was told before the exercise to write his/her group number on the note he/she was going to invest.

Among top five groups receiving more than 2000 euros we had three lag-user and two innovator groups. Among top nine groups (i.e. receiving more than 1000 euros) we observed lag-user and innovator groups getting the same amount of investment. In the seven groups that received less than 1000 euros we had four innovator and two laggard groups. The idea in last place (received only 100 euros) was developed by the individual used as a control, which did not follow any particular methodology.

Having concluded the process, innovators indicated that they learned that everything could be questioned and improved and it is necessary to be able to "think out of the box". They also learned that in order to come up with the ideal solution, it is critical to define the need and the problem properly as well as to create a perfect match between product and the market. They pointed out the value of brain-storming and encouraging wild ideas and later on building on these ideas to come up with concrete solutions. Participants concluded that simple solutions could be innovative, i.e. new successful ideas do not need to be complicated. In addition, one participant even mentioned that the idea generated through the Lag-User Method motivated him to start his new business.

Lag-users on the other side mentioned that they learned that a product cannot remain static and that there is no absurd idea. They mentioned that they understood that not only innovators, but also lag-users are important and can contribute to innovation. On the whole participants mentioned that they found the method an "exciting and wonderful" journey, which helped them become aware of their potential as innovators. One lag-user concluded: "It was fun to think about an innovation for a product I am classified a laggard for!"

2.3.3. Major Findings and Conclusion of Study One

During study one we found out, that using pre-printed forms facilitates participants' understanding of the method and helps them concretize thoughts and ideas within the given frame. Study one proved that lag-users do not see themselves capable of innovating, e.g. one participant of this study mentioned: "But we are laggards, how could we innovate?" However, at the end of the sessions, laggards came up with new successful ideas and indicated that the Lag-User Method helped them to understand the process of innovation. Having concluded the seminar, they came to the conclusion that provided with the right tools and coaching, they could also innovate and come up with ideas for products, which are customized to their needs. Moreover, we found out that lag-users seek customized products and if guided, are very well able to define their needs and develop a prototype of their ideal product. This – from a manufacturer's point of view – can be an important piece of information. For example in our study while innovators developed laptops of the future, lag-users came up with "human friendly laptops", a very basic version of a laptop, which fulfills only basic needs. An innovator group working on smartphones came up with the idea of a waterproof smartphone called "iDive" whereas a lag-user group working on the same product developed sPhone (s for simple), which is a very simple and uncomplicated version of a smartphone.

2.4. Study Two: Application of Lag-User Method to Services

The main purpose of study two was the application of Lag-User Method to services, in order to see to what extent the method would require significant adjustments for services.

2.4.1. Participants and Procedure of Study Two

The sample of study two consisted of 17 Masters and MBA students attending a two-day seminar in a business school in Germany. Students were divided into 8 groups of 2

participants and one individual. In order to verify the performance of individual vs. group, for this study, the individual used as a control had proper knowledge of the topic and followed the Lag-User Method. With exception of one Persian participant, all others were German. Demographically, the participants ranged in age from 19 to 47 and had an average age of 24. In this study, 13% were female and 79% were male. In average, participants had seven years of professional experience. They had a very good understanding of the difference between a laggard and a non-user (average of 4.8, range 1-5) as well as the definition of a laggard (average 4.5, range 1-5). Individuals appeared to have significant interest in the subject (average of 4.4, range 1-5) and believed that the quality of the seminar content addressing this methodology was high (average of 4.4, range 1-5). Collectively, this indicates that the sample is reliable and appropriate for this study.

2.4.2. Results of Study Two

In this study, participants were asked to identify services for which they considered themselves innovators or laggards and mention at least one reason why. The majority of products mentioned on both sides were about online services, e.g. online banking, online shopping, mobile internet, different mobile applications, online magazines and online flight check-in.

Eight groups of two were formed: four innovator and four lag-user groups. In order to compare the performance of an individual lag-user. Lag-users mentioned lack of interest in the product, other priorities, limited financial resources, more critical point of view toward products and existing product alternatives as reasons why they are lag-users. Innovators, on the other hand, mentioned different reasons, e.g. looking for the best available solution and its advantages, curiosity about new technologies, thinking unconventionally and being fast adopters.

Also in this study several participants found it difficult to think out of the box, because they often reject new ideas. One participant mentioned: "It was difficult for me to think of new ideas, because the picture of existing products was in my mind all the time." "Giving weird solutions a chance" was one of the difficulties mentioned. Although participants had no difficulty in mentioning their specific needs, some found it difficult to evaluate if their need would become common in the future market.

Finally to compare the ideas generated by innovators with those generated by lag-users, participants were asked to prepare an elevator pitch and as mentioned in study one, again each participant was given the same amount of monopoly cash to vote for their favorite ideas, following the rules mentioned in study one.

For this study, we had a total of 9 groups (4 innovator groups, 4 lag-user groups and 1 control individual, who was also a lag-user). Among top four ideas receiving more than 2000 Euros, we had two lag-user and two innovator groups. We had one lag-user group, receiving more than 1000 euros. In the four groups that received less than 1000 euros we had two innovator groups and two lag-user groups.

2.4.3. Major Findings and Conclusion of Study Two

During study two participants mentioned that it was important to "become familiar with the basic structure of thinking". Having concluded the Lag-User method, participants mentioned that they were motivated to do the whole process of innovation and called the Lag-User Method "an exercise in courage". One lag-user participant mentioned that she learned not to kill her ideas too soon. She said: "The exercise showed that all of us can innovate". Another lag-user participant mentioned: "I was having a lot of fun. What I liked was that it [the Lag-User Method] made me play with my limits. It pushed me to leave my limits out. It

was a lot about freedom and courage. That is why I think this is something people should do more of, maybe as a hobby with friends at home." Another lag-user mentioned: "In the beginning I thought I would not be so innovative, but in the end I realized that innovation can be learned."

With focus on services, study two revealed that the Lag-User Method can also be applied to services without adjustments. Having compared innovator with lag-user innovation in study two, we found out that not only innovators, but also lag-users can generate new ideas. Table 3 shows the initial services which participants of study two worked on as well as the products eventually developed by them.

====Insert table 3 about here=====

2.5. Study Three: Consumer Goods vs. Services

While working on consumer goods, in study three we observed if the new product would be consumer goods or services. In this study, we merely focused on lag-users.

2.5.1. Participants and Procedure of Study Three

The sample of study three consisted of 18 Master students attending a two and a half day seminar in a leading business school in France. Students were divided into 9 groups of two. With exception of three participants, all others were French (one Bolivian, one South Korean and one Vietnamese). Demographically, the participants ranged in age from 22 to 30 and had an average age of 24. We had 77% female and 23% male participants. In average, participants had three years of professional experience. Participants had a very good understanding of the difference between a laggard and a non-user (average of 4.9, range 1-5) as well as the definition of a laggard (average 4.9, range 1-5). Individuals appeared to have significant interest in the subject (average of 3.8, range 1-5) and believed that the quality of the seminar content addressing the Lag-User Method was high (average of 4.0, range 1-5). Collectively, this indicates that the sample is reliable and appropriate for this study.

2.5.2. Results of Study Three

In study three, participants made two lists of consumer goods and services for which they considered themselves to be lag-users. We noticed that the majority of participants mention modern technology products (e.g. smartphone, tablets) and online services (e.g. social networks, online shopping). So groups were formed based on the products that participants had in common.

In this study, participants referred to the following reasons why they are laggards: being suspicious about new technologies and services, being resistant to change, having difficulties in changing habits, being forced by the society to adopt a product, unwillingness to allocate financial resources to specific products, waiting for others to use and approve/recommend a product, being careful and demanding (customized products), and lack of information about the product. Moreover, we observed that all groups working on online services (e.g. social networks, online shopping) mentioned privacy, (unlimited) use of personal information and data security as the major needs/problems that the products do not fulfill.

In study three, participants found it difficult to "find creative ideas for a common product". Several participants mentioned that they found it easier to identify products for which they were a lag-user rather than products for which they were an innovator. Others

mentioned that for them it was easier to think of technological products rather than services. As lag-users they also found it challenging to work on a product they do not really "like". Table 4 presents a list of products developed by participants of Study Three which were then presented to the whole class.

====== Insert table 4 here ====

2.5.3. Major Findings and Conclusion of Study Three

Results of study three showed that out of four groups working on consumer goods, two came up with services (group 2 and group 9). This could indicate that through lag-user innovation, we can help companies move from consumer goods to services.

2.6.Study Four:

Major purpose of study four was to apply the Lag-User Method to consumer goods.

2.6.1. Participants and Procedure of Study Four

The sample of study four consisted of 24 MBA Students attending a course in a leading business school in Cyprus. Students were divided into 12 groups of 2 participants. Participants had seven different nationalities. Demographically, the participants ranged in age from 24 to 44 and had an average age of 31 and were 50% female and 50% male. In average, participants had 5.7 years of professional experience. Participants had a very good understanding of the difference between a laggard and a non-user (average of 4.7, range 1-5) as well as the definition of a laggard (average 4.7, range 1-5). Individuals appeared to have significant interest in the subject (average of 4.1, range 1-5) and believed that the quality of the seminar content addressing this methodology was high (average of 4.0, range 1-5). Collectively, this indicates that the sample is reliable and appropriate for this study.

2.6.2. Results of Study Four

In this study, participants made lists of consumer goods for which they consider themselves to be laggards. Groups were formed based on common products mentioned on the lists. In sum we formed twelve lag-user groups. During a discussion, one group mentioned: "We buy a product or service after it is tested". "We want to learn from other people's experiences". Participants also mentioned that their main difficulty was lack of ideas for products for which they considered themselves to be laggards.

Table 5 shows a list of consumer goods that our lag-user participants worked on as well as the products developed by them to solve the problems and fulfill the needs that the initial product is not fulfilling. Having presented the prototypes to the whole class, participants were given monopoly cash to invest in their favorite products. Low energy microwave won the most amount of investments, followed by T-Top and UniCloths.

===== Insert table 5 here =====

2.6.3. Major Findings and Conclusion of Study Four

Study four showed that lag-users can come up with breakthrough innovations, e.g. UniCloths. Moreover, the investments showed that ideas developed by lag-users are being accepted by the majority. Having different groups working on same products (e.g. two groups working on laptops or two groups working on cloths) showed that lag-users identify similar needs and problems in a product, which are later accepted by the majority.

2.7.Study Five

In study five, in cooperation with two major five star hotel chains, we focused on services offered by these companies, in order to see to what extent lag-user innovation is accepted by firms. As such, the final results were then discussed with executives of the same organizations.

2.7.1.   Participants and Procedure of Study Five

The sample of study five consisted of 16 Master students attending a course in a leading business school in Cyprus. With exception of one participant from Cuba, all others were Cypriots. Demographically, the participants ranged in age from 22 to 45 and had an average age of 31. We had 67% female and 33% male participants. In average, participants had five years of professional experience. Participants had a very good understanding of the difference between a laggard and a non-user (average of 4.8, range 1-5) as well as the definition of a laggard (average 4.9, range 1-5). Individuals appeared to have significant interest in the subject (average of 4.8, range 1-5) and believed that the quality of the seminar content addressing this methodology was high (average of 4.0, range 1-5). Collectively, this indicates that the sample is reliable and appropriate for this study.

2.7.2.   Results of Study Five

For this study, in cooperation with the managers of the two hotel chains, we created a list of the services offered by these hotels. After explaining the concept of diffusion of innovation curve, participants were asked to go through each list and select the service(s) for which they consider themselves to be laggards. Based on the responses, we formed 8 groups of two: 7 laggard groups and one majority group which was used as control. Problems identified in this study were mainly around flexibility, privacy and safety issues. Table 6 offers an overview of the services developed by participants of study five.

====Insert table 6 about here=====

2.7.3.   Major Findings and Conclusion of Study Five

Study five showed that although our lag-user participants found it more difficult to work on services, they were able to identify their unfulfilled needs and consequently come up with solutions to fulfil those needs. Having concluded this study, we presented and discussed the results to two managers, each from one of the major hotel chains involved in this study. Both managers believed that the majority of services developed by lag-users could be implemented in their organizations and so find acceptance among the rest of their customers. They mentioned that those services, which could not be implemented immediately, would definitely fit into each organization after some minor adjustments. For example in the case of Ultimate Experience Bar Table, while one manager mentioned that she believed that she could apply this solution without modifications to another business unit, namely the restaurant, the second manager was less receptive to this idea because offering customized drinks in the bar would reduce the time-saving effect of mass-customization. However, he was receptive to another function of the table, the drink order function, because this one could reduce staff costs.

Another example is customized theme parties for corporate events. Our second manager mentioned that his organization was working on exactly the same idea and was positively surprised by the fact that users were also thinking about the same service. He confirmed that he could use insights provided by our lag-user participants to find the perfect match between user-led and manufacturer-led innovations.

Both managers confirmed that using lag-users can help them identify unfulfilled needs of their customers. They agree that once they fulfil those needs or simplify the existing solutions, laggards could adopt faster and so turn into innovators. Although they could not implement all new ideas, they found useful insights which could be implemented in the same or another business unit. The difference between both managers' initial attitudes towards lag-users' ideas showed us the importance of manufacturers or service providers being receptive to ideas provided by users. While one was more open and saw opportunities to implement the ideas in different units of the organization, the other rejected the initial ideas because he was expecting ideas 100% customized to his organization's vision. After some thoughts he realised that some ideas had a lot of potential and others could be used after some adjustments.

3. Conclusion and Directions for Further Research

"The real voyage of discovery consists of not in seeking new landscapes but in having new eyes." (Marcel Proust)

Our findings revealed that before applying the Lag-User Method to our laggard participants, unlike innovators, they do not see themselves as innovators. Our studies showed that in order to innovate, they need to be coached, guided and provided with the right tools and methodology. We found out that after following the Lag-User Method, lag-users that initially believed to be non-innovators were able to present radical, really new or incremental innovations (Garcia & Calantone, 2002). We measured different items before and after applying the Lag-User Method and found out that after following the method their perception of several aspects about innovation significantly increases, namely regarding their a) understanding of innovation, b) perception that people can learn to innovate, c) perception of their capability to develop new products on their own, d) confidence about their own new ideas, e) capability to convince people to accept their ideas, and f) perception of considering themselves innovators. Having concluded the Lag-User Method, participants were also highly convinced that by following a structured methodology (e.g. Lag-User Method) they can come up with new ideas.

We also applied the Lag-User Method to innovators. Empirical findings revealed that although both innovators and lag-users contribute to new product development, they have different perceptions of user-friendly products as well as different needs and expectations. Comparing lag-users and innovators showed that as lag-users are less familiar with a given product, they are less influenced by prior knowledge and very often think more "out of the box". Moreover, we found out that unlike innovators, lag-users are resistant to change and difficult to convince about a product; however they can clearly define their needs for customized products. Their insights are very useful to help companies find out why it took lag-users so long to adopt a product and thus manage the diffusion barriers. Moreover, information provided by lag-users can help firms simplify over-engineered products and offer easy-to-use solutions. Our studies showed that lag-users are more critical than other user categories. Therefore, firms can use them to identify weaknesses of a product and so simplify converting a product's weakness into strength. Findings also revealed that lag-users are critical in identifying emerging trends. Information provided by lag-users could also be of major interest to competitors or followers of a specific product.

We discussed our findings with managers of service and technology companies to test the feasibility of our results, to find the right match between lag-user innovation and

manufacturer expectations and to discuss possibilities of implementing the solutions and prototypes created by lag-users. Finally, we presented our findings to three focus groups with a total of 28 executives to get managerial insights about Lag-User Method.

Our executive focus groups confirmed that lag-users' critical insights, which we discovered during the five steps of the Lag-User Method, are useful to help companies find out the reason why it took lag-users so long to adopt a product and simplifies converting a product's weakness into strength. As mentioned by an executive, lag-users' needs are the "amplified needs of the majority" and thus cannot be ignored. Our interviews with managers of the industries we worked with also approved that lag-users are critical in identifying key problems of a product or service as well as the emerging trends. This knowledge allows companies to squeeze the Roger's (1995) curve horizontally, i.e. to reduce the adoption time and to overtake the competitors. They confirmed that lag-users provide useful information about how to modify a product, to avoid decline and expand the product life cycle, or to develop the new generation of products to address a larger market segment. Having observed the solutions developed by our lag-user participants, managers of the industries we worked with indicated that they were not aware of the problems identified by lag-users. They mentioned that solutions / prototypes created by lag-users could partly a) be implemented without modifications in their company or b) could be modified and implemented or c) could be implemented in other strategic business units. Moreover, information provided by lag-users could also be of major interest to competitors or followers of a specific product/technology. Finally, based on our studies with lag-user teams and follow-up discussions of our findings with executive focus groups and interviews with managers of the studied industries, we propose that by involving lag-users in the NPD process, firms can address a wider range of users and create new market spaces. Several solutions proposed by lag-users who went through the Lag-User Method for the past two years, have been later introduced to the market by global brands. This demonstrates the relevance of the ideas generated by lag-users.

Future research is encouraged to explore the impact of the Lag-User method on company's innovation and technology management and find out how the Lag-User Method contributes to intra- and inter-organizational learning of innovation. Researchers are also encouraged to find out how applying Lag-User Method can create competitive advantage for firms, enable firms to squeeze the Rogers curve, cross the chasm and increase the product life cycle.

In sum, we propose that lag-users are a secret source of new ideas and innovations that has been surprisingly overlooked by both theory and practice. We believe that our current research contributes to the advancement of the innovation field by starting to investigate lag-users. As such, we propose that firms should use laggards as a source of rich ideas to develop new generations of products.

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Table 1: New Products Developed by Lag-User Participants of the Exploratory Study and Their Corresponding Type of Innovation

	Product	New Product	Product Description	RADICAL	REALLY NEW	INCREMENTAL
Team 1	Sushi	Sushi My Way	Sushi My Way is a Sushi Restaurant, in which customers can combine their favourite ingredients, aligned with local tastes. The restaurant also serves typical fast food, pasta and salads. (e.g. for kids).		X	
Team 2	Sushi	Sushi Party	Sushi Party is a sushi machine with integrated rice cooker (e.g. for parties)			X
Team 3	Eastpack	X-Pack	X-Pack is a modern and ecological back-pack with heating system and solar energy.		X	
Team 4	External Hard Disc	SafEasy (Cloud Hard Disc)	SafEasy is a cloud hard disc, i.e. a cloud space, which replaces heavy hard discs. It is fast and secure and users can have access to their files saved in the cloud the moment they go online.			X
Team 5	iPhone	LifeLink (Cloud Syncronization)	LifeLink is a website, where users can register and can syncronize all the data from their smart-phones (e.g. applications, contacts, messages, photos, etc). They can have access to the data anytime they go online. (e.g. if they lose or forget their phone).		X	
Team 6	Wine	Wine Flash Code	Wine Flash Code is part of a label on wine bottles, to help wine beginners get to know and appreciate wine. The Flash Code provides customers with all the required data about the origin, taste, right occasion, and right dishes.		X	
Team 7	Cider	Strongbow (New Image for Cider in France)	A new branding and communication strategy was developed to change the positioning of Cider in France., e.g. through new packaging and new advertising campaigns.			X
Team 8	Coffee Cup	Compact Thermos (Coffee Cup with New Features)	Compact Thermos is a retractable dish-washer resistant thermos. It is environmentally friendly and does not take space which carrying, because it is retractable.		X	

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Table 2: New Products Developed by Participants of Study One and Their Corresponding Type of Innovation

		New Product	Product Description	RADICAL	REALLY NEW	INCREMENTAL
I N N O V A T O R S	Team 1: Laptop	LSPP	Laptop, scanner, printer and projector, all in one portable device. The screen can be separated and used as a tablet PC.		X	
	Team 2: Laptop	Netpad	Net pad is a combination of a netbook and a tablet PC, having both a keyboard and a touchpad on the screen. The screen can be used separately as a tablet PC. The keyboard serves as a dock-station for charging battery.		X	
	Team 5: iPhone	iJobs	iJobs is a smaller version of iPhone for students with less income. It has less storage capacity and requires less battery. iJobs is available in different colors for different tastes and moods (similar to iPod).		X	
	Team 6: iPhone	iPhone Plus	iPhone Plus is a small accessory that can be attached to an iPhone. It contains a keyboard to facilitate typing and works with solar energy. iPhone's battery can be recharged through iPhone Plus anytime without electricity.		X	
	Team 9: Car	Range Extenders	Range extender engine for electric cars is a generator, which provides an extended driving range to an electric engine, allowing it to speed up very fast.			X
	Team 12: Internet	USB Secuirty Device	USB security device is a USB stick which automatically installs and updates security and anti-virus systems and is compatible with any PC. It is cheap and easy to use.		X	
	Team 13: Mobile Phone	iDive	iDive is a water-proof smart-phone that resists the under water pressure and can be used by divers.	X		
	Team 15: 3D Printer	Home 3D Printer	Home 3D Printer is a smaller and less expensive version of 3D printers for private use.			X
L A G - U S E R S	Team 3: Laptop	Human Friendly Laptop	Human Friendly Laptop is a simple version of a laptop with basic programs, developed for those who do not feel confident using complicated laptops. It includes an after-purchase service, helping the customer to get to know the device.		X	
	Team 4: Laptop	RollTop	Rolltop is a tablet PC to which a small portable printer roll and projector are attached. In addition to the touch pad, the user can write the text with the special pen on the screen and the text will automatically be transmitted into the document.	X		
	Team 7: Mobile Phone	EnerMob	EnerMob is an energy saving simple mobile phone, which can only be used for calling and writing text messages. The battery recharges with solar energy and the color of the cover changes based on the amount of battery left. The cover is filled with a liquid that absorbs the unhealthy radiations.		X	
	Team 8: Car	Futura - Affordable Car	Futura is an affordable hybrid car with an attractive design, offering customized features that exist in premium cars.	X		
	Team 10: Car	Auto-Chromodity	Auto-Chromodity is a non-scratch, shatter-proof glass which changes color. Using this in car industry offers car owners a unique experience of having a car which changes color.	X		
	Team 11: Espresso Machine	Elite Espresso Machine	Elite Espresso Machine is a combination of espresso machine, coffee machine, water dispenser, tea maker and frappé mixer.			X
	Team 14: Mobile Phone	sPhone	sPhone (s for simple) is an extremely cheap and simple mobile phone with a modern design, powered by solar energy.		X	

Table 3: New Products Developed by Participants of Study Two

Group Number	Category	Initial Product	Developed Product
1	Lag-User	Social Network	Social network with new features for data security, i.e. the user has a complete control on his data, regarding who can see it and to whom it is sold. Once the data is sold, the user received a commission.
2	Lag-User	Pay TV	Pay TV application, which allows you to select whatever program you want. It can be used on several devices and allows your pay TV to be mobile.
3	Lag-User	Online Shopping	Local stores for online shoppers with at least one sample of each product, which allows buyers to touch the product and try the clothes. Orders can be delivered to local shops or directly to customers.
4	Lag-User	Mobile Internet	"OneCon" is a bracelet that connects all your devices to internet via satellite connection.
5	Innovator	Online Banking	An application for online banking, accessible via fingerprints, which connects all your bank accounts.
6	Innovator	Online Shopping	Service system for supermarket online shopping
7	Innovator	Mobile Applications	Mobility App is an application that embodies all you need in a city, e.g. information about public transport, navigation, traffic, etc.
8	Innovator	Mobile Internet	Hot-Spot points in different areas where no internet connection is available.
9	Innovator	Railway	Railway application for smartphones and tablets, in which you can log-in with your ticket number and from that moment on you are informed about all delays, distance left to destination and a measure for CO_2 saving in comparison to car or plane. The app offers extra features for frequent travelers.

Table 4: New Products Developed by Participants of Study Three

Group Number	Category	Initial Product	Developed Product
1	Lag-User	Social Network	Mixpeople.com, a social network that is based on differenced, not communalities.
2	Lag-User	Laptop	A laptop leasing service, which provides you with the latest laptop on the anytime, anywhere. Users get access to their data using cloud solutions and independent from the device they are using.
3	Lag-User	Facebook	"Be Safe & Different", a confidentiality customization, i.e. new feature added to available social networks enabling users a high range of privacy and customization.
4	Lag-User	Twitter	"New-Born Twitter", an interactive version of Twitter, featuring more attractive options, e.g. chat rooms, games and photo albums.
5	Lag-User	Smartphone	Shock-proof mobile shell, which protects smartphone in case they fall. (Below a picture of the prototype)
6	Lag-User	Online Shopping	Body-Scan Technology, an online tool that scans the customer's body through a web-cam and creates an avatar, who can try the cloths virtually.
7	Lag-User	Cars	Libertá, the small "home car" is a combination of a normal car and some extra features and functionalities, e.g. mini fridge, foldable seats (providing space to sleep).
8	Lag-User	Public Transport	Bus à la Carte, a public transport service especially for people living in country side, which is available upon phone call.
9	Lag-User	Cars	P & R with two-wheel vehicles rent service, i.e. you park your car in the P & R, take a bike or a motorbike and go to the city center.

Shock-Proof Mobile Shell

Table 5: New Products Developed by Participants of Study Four

Group Number	Category	Initial Product	Developed Product
1	Lag-User	Health Products	Lett-Use Cream, an organic natural cream based on lettuce, sold at reasonable prices
2	Lag-User	Tablet PC	Double Side Tablet PC, ideal and practical for frequent travelers
3	Lag-User	Mobile Phone	Basic Phone, a simple phone for simple users to which additional features can be added upon request
4	Lag-User	Car	Solar light car, a environmentally friendly and less costly car, developed for city residents
5	Lag-User	Laptop	Laptop with foldable screen and removable keyboard
6	Lag-User	Clothes	Whole Body Suite, similar to divers' suites, a water-proof uniform that facilitates people's choice for clothing, suitable for every season and does not need ironing
7	Lag-User	Microwave Oven	Low energy microwave oven with attractive design, touch screen and voice recognizer
8	Lag-User	Washing Machine	Intelligent washing machine with extra features, e.g. to facilitate ironing, cloths could be hung in the machine while they are being washed.
9	Lag-User	Pharmaceuticals	Fuzzy Ginger Powder, natural ginger-based energy product
10	Lag-User	Laptop	T-Top Terminal, a key hanger which is a terminal which can be installed on different devices, so users do not need to carry devices, e.g. laptop all the time. They just attach the terminal to the new device.
11	Lag-User	Clothes	UniClothes, cloths which are uploaded on your body anytime, anywhere using the nano technology.
12	Lag-User	Sport Equipment	Designer clothing lines for each sports club

Table 6: New Products Developed by Participants of Study Five

Group Number	Category	Initial Service	Developed Service
1	Lag-User	Leisure Club	EverView is a pair of glasses, enriched with a smart camera technology. Parents can use these glasses to monitor their children (e.g. while playing in the swimming pool).
2	Lag-User	Spa	Spa on the Go is a mobile and flexible service of spa, from which customers can profit anywhere in the hotel premises, be it in the room, on the beach or next to the pool.
3	Lag-User	Bar	Ultimate Experience Bar Table is a table with tablet technology. Customers can play games on the table, order their drinks, customize the ingredients of their drinks and even watch the barman preparing their drinks.
4	Lag-User	Gym	Lazy Gym is a gym designed for people who do not go to gym often. It offers a performance/reward system, e.g. 30 minutes training, 10 minutes massage. The nutrition specialists present in the gym allow the customers to have fast food, but only under their supervision.
5	Lag-User	Direct Online Booking	Finger Print Gadget is a gadget that allows safe payments for online booking through finger prints.
6	Lag-User	Private Parties	Pocket Party Planner is an application through which you can plan a party in only a few minutes. You can customize your party to your budget and needs, you can rate the hotel after the party and share your experience with other users of the app.
7	Lag-User	Corporate Parties	Customized Theme Parties offers organizations parties with location, decoration, meal, etc all customized to match a certain theme, e.g. Africa, nature, summer.
8	Majority	Private Parties	Trendy Customized Parties is a service that enables you to plan a party based on your budget. You are allowed to remove any item from the list and do it yourself, e.g. bring the food or bring your own DJ.