













the respondents to express their agreement or disagreement on an ordinal five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) with statements describing different motivations to purchase virtual FPS game items. These 23 statements are presented in Appendix 1. Additionally, the questionnaire included 12 questions about individual gamers' backgrounds, such as gender, age, primary status, time spent on FPS games, money spent on virtual FPS game items, other reasons for purchases, and future purchase intentions of virtual FPS game items.

The data was collected in October 2013. A link to the questionnaire was posted in Valve's Team Fortress 2 forums, Sony's PlanetSide 2 forums, and Facebook (for public sharing). Users could respond to the questionnaire anonymously. In total, 98 gamers completed the questionnaire. Before the actual collection, we conducted a small pilot focus group session with three active Team Fortress 2 gamers. This focus group answered and reviewed the questionnaire items by thinking aloud their perceptions and opinions. The pilot session aimed to modify and verify the suitability of the proposed questionnaire items as well as to examine gamers' willingness to answer. The pilot group provided only a few suggestions for covering the most prominent motivations for purchasing game items: Based on the feedback, one item was deleted and two items focusing on team play support and strategic planning were added. Generally, the pilot respondents were able to complete the questionnaire rather easily.

### **3.2 Data Analysis**

The data was analyzed using the SPSS software. To evaluate how well the questionnaire items measured functional and hedonic motivations, we calculated Cronbach's alphas. As the values for both functional and hedonic motivations exceeded 0.8, the reliability of the item measurements could be considered satisfactory (Nunnally and Bernstein, 1994).

To identify distinct gamer groups, the responses were submitted to a cluster analysis. Cluster analysis is used to identify homogeneous groups, when the number of groups or group membership for the cases is unknown. One of the typical ideas of clustering is to minimize within-group variation and maximize between-group variation (Vassilikopoulou et al., 2005). In a number of studies in different disciplines, such analysis has been found useful in developing typologies of individuals. One important use of clustering is to identify different groups of buyers' regarding their behavioral characteristics (Punj and Stewart, 1983).

In this study, clustering aimed to divide or segment gamers into relevant homogeneous groups based on the gamers' ratings on the statements regarding motivations to purchase virtual game items. We applied Ward's hierarchical method for cluster formation and Euclidean distance for distance measurement. The analysis resulted in four different clusters of gamers (cluster sizes:  $C^1=32$ ;  $C^2=35$ ;  $C^3=25$ ;  $C^4=4$ ). We chose to distinguish four clusters by considering previous studies and following the pattern of the clustering process. The resulting four clusters were then interpreted and prepared for reporting the results based on the between-group differences in the mathematical means of the measured items.

Finally, we compared the potential differences in gamer background (intention to purchase game items in the future, age, and primary status) among the different clusters. We estimated the prospective statistically significant differences between the distributions in different clusters by applying cross-tabulations with Pearson's chi-squares. Overall, the summary of our research process is illustrated in Table 2.

Stage	Description
Development of the	We developed the model based on previous studies that focused on

<b>conceptual model</b>	individuals' motivations to purchase virtual game items.
<b>Formulation of the questionnaire items</b>	The questionnaire items were adapted and modified mainly from previous studies (with a few additions related to the FPS game context).
<b>Pilot: Focus group</b>	We piloted the questionnaire with a small focus group to fine-tune the wordings, ensure the coverage of the motivational attributes, and find out gamers' willingness to participate.
<b>Online questionnaire</b>	The questionnaire link was submitted to different forums relevant for FPS gamers.
<b>Cluster analysis</b>	We applied cluster analysis to identify different gamer groups regarding their motivations to purchase virtual game items.
<b>Cross-tabulations</b>	We used cross-tabulations to examine whether there were statistically significant differences among the gamer groups related to the gamers' intention to purchase, age, and/or primary status.

**Table 2:** Summary of the research process: The main stages and their descriptions

### 3.3 Respondents

The background information of the respondents is summarized in Table 3. On average, the respondents estimated that they had spent 57 Euros for virtual goods in FPS games within the last six months. As expected, the reported amounts varied a lot: from 0 Euros to 600 Euros. In our sample, the majority of the respondents were male (96.9%), students (67.7%), and 30 years old or under (75.5%). These distributions can be considered to reflect FPS gamers because online games related to weapons and war typically attract young males. Similarly, many previous studies on online games have had male-centric samples, and it has been stated that the majority of heavy gamers are young men (Kirriemur and McFarlane, 2004, according to Park and Lee, 2011).

The participants named fifteen different FPS games as their favorite and ten different games as the FPS games they based their responses on. For the latter, the most frequently mentioned games were Team Fortress 2 (53) and Planet Side 2 (22). Altogether, the gamers who opened the questionnaire web link were from 22 countries: mostly from Finland and the United States, but also from Canada, Sweden, Estonia, Denmark, Germany, and Brazil.

<b>Gender</b>	<i>Male</i>	95 (96.9 %)
	<i>Female</i>	3 (3.1 %)
<b>Age</b>	<i>Under 20</i>	34 (34.7 %)
	<i>20–30</i>	40 (40.8 %)
	<i>Over 30</i>	20 (20.4 %)
	<i>N/A</i>	4 (4.1 %)
<b>Primary status</b>	<i>Work</i>	40 (41.7 %)
	<i>Student</i>	65 (67.7 %)
	<i>Unemployed</i>	7 (7.1 %)
<b>Average time used for playing games per week</b>		22.6 hours
<b>Average time used for playing FPS games per week</b>		13.5 hours
<b>Average money spent for virtual game items within 6 months</b>		65 € (ranging from 0–600 €)
<b>Average money spent for virtual FPS game items in past 6 months</b>		57 € (ranging from 0–600 €)

**Table 3:** Background information of the respondents



## 4 Results

Based on the cluster analysis, we identified four distinct clusters as gamer groups: three groups of buyers and one group of non-buyers. The average means of the gamer groups for each questionnaire item are illustrated in Figure 2. The four groups are first labeled and described and then compared regarding the gamer groups' background information.

### 4.1 Group I: Aesthetes

Group I involved gamers who strongly valued specific hedonic motivations: visual appeal, humor, and hedonic self-expression. In particular, the respondents wanted to purchase items that made their game character look better. As a contrast, the respondents rated most functional motivations very low (except for item quality, which was rated rather highly among all buyer groups). For example, they did not value game items for their prospective effects in performance advantage, power advantage, strategic planning, or team play support at all. Consistent with these findings, we labeled this group of gamers as *aesthetes*. The group accounted for 32 respondents who were mainly students (69%), a lot of them less than 20 years of age (50%).

### 4.2 Group II: Adventurers

Group II had some similar characteristics with the first group: this group contained gamers who valued visual and audio appeal, playfulness, humor, and hedonic self-expression. However, as the main difference compared to the first group, they reported an average agreement with many functional motivation attributes. Overall, this group highlighted hedonic motivations but did not downplay the functional motivations. Therefore, this group was named *adventurers*. The group included 35 respondents who were mainly students (80%), a lot of them less than 20 years of age (46%).

### 4.3 Group III: Performers

Group III contained gamers who especially valued those motivational attributes that were related to performance and power advantage. These gamers reported only an average agreement with several hedonic motivation statements but, interestingly, there were no particularly low ratings for any motivational aspect. Compared to adventurers, this group valued more functional and less hedonic motivations. According to these findings, we labeled this group as *performers*. This group accounted for 25 respondents. The majority (60%) of these respondents were young adults between 20 and 30 years of age. Among them there were almost equal numbers of students (52%) and those in working life (48%).

### 4.4 Group IV: Critics

Group IV included very different gamers containing only four respondents. These gamers were non-buyers and strongly disagreed with all reasons for game item purchases. The average ratings for all motivational statements were extreme low (equal to or less than 2). None of these respondents planned to purchase virtual items within the next six months. According to these insights, we labeled this group as *critics*. Two of the critics were over 30, while two were less than 30 years of age. Both students and workers were included.

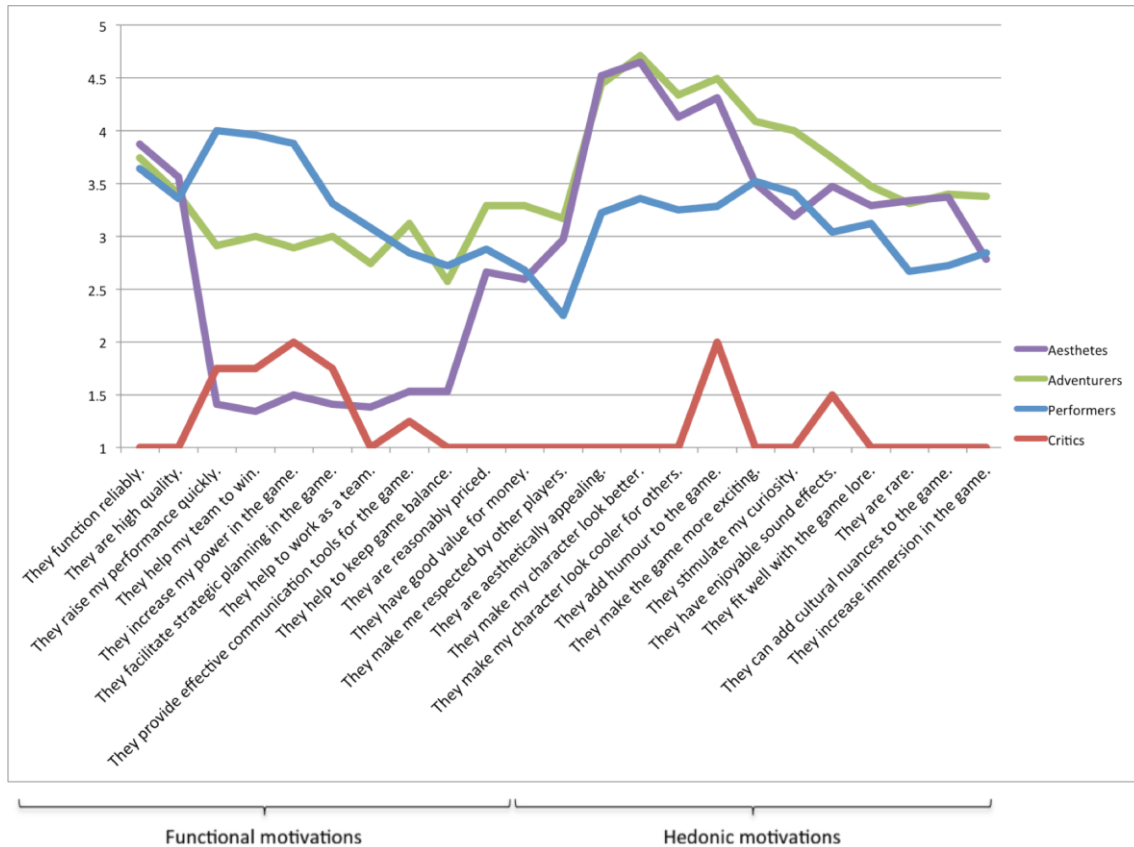


Figure 2: Comparison of the gamer groups

### 4.5 Background Information of the Groups

There are two statistically significant differences in the background variables related to the groups. First, the intention to purchase game items within the next six months significantly differed among the gamer groups according to our chi-square tests. As presented in Table 4, the majority of the aesthetes (67.7%) and adventurers (68.6%) reported that they were likely to purchase game items in the near future. As for the two other groups, a smaller share of the performers (40%) and none of the critics (0%) intended to buy game items within the next six months.

Group	Purchase intention in the next 6 months:	Not likely	Likely	Total
<b>I Aesthetes</b>	% within group	32.3 %	67.7 %	100.0 %
<b>II Adventurers</b>	% within group	31.4 %	68.6 %	100.0 %
<b>III Performers</b>	% within group	60.0 %	40.0 %	100.0 %
<b>IV Critics</b>	% within group	100.0 %	0.0 %	100.0 %

Table 4: Cross-tabulation: Purchase intention in the next 6 months and gamer groups

Second, the cross-tabulation (Table 5) and chi-square tests indicated that age groups differed significantly between the gamer groups: gamers under 20 years of age formed the largest group of aesthetes and adventurers, whereas the majority of performers and critics were older than 20

years. We also investigated the differences of the respondents' primary status (student, unemployed or employed), but found no statistically significant differences.

<b>Group</b>	<b>Under 20</b>	<b>20-30</b>	<b>Over 30</b>	<b>Total</b>
<b>I Aesthetes</b> % within group	50.0 %	40.6 %	9.4 %	100.0 %
<b>II Adventurers</b> % within group	45.5 %	33.3 %	21.2 %	100.0 %
<b>III Performers</b> % within group	8.0 %	60.0 %	32.0 %	100.0 %
<b>IV Critics</b> % within group	25.0 %	25.0 %	50.0 %	100.0 %

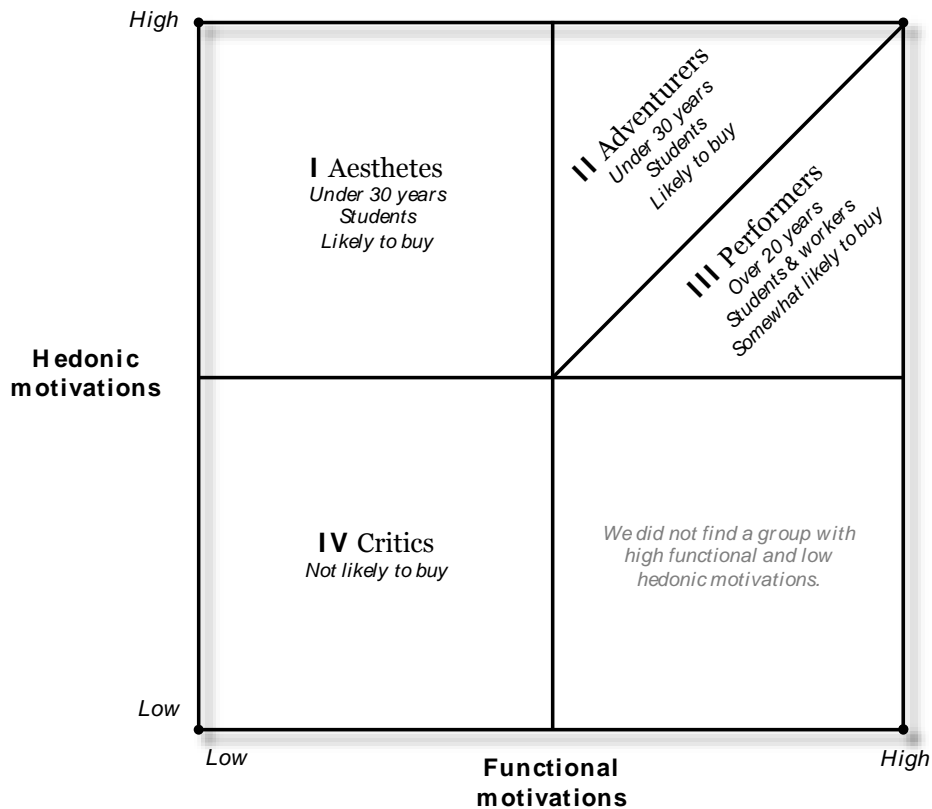
**Table 5:** Cross-tabulation: Age and gamer groups

## **5 Discussion**

This article contributes to existing knowledge by presenting a new typology of gamers according to their motivations to purchase virtual game items. Previous studies have reported empirical investigations about the main motivations for virtual item purchases among gamers in general, but they have not taken a stand on the prospective individual differences of purchase motivations. Therefore, our typology assists researchers to understand different gamer groups and providers of games and similar virtual service environments to communicate and market virtual items in more suitable ways.

### **5.1 Theoretical Contribution: A Typology of Gamers**

In the empirical part of our study, we found three distinct groups of game-item buyers and one group of non-buyers. Based on these findings, we developed a typology of gamers that is illustrated in Figure 3. Even though the extant gamer typologies do not examine any purchase motivations, we used them to compare and contrast our typology as follows.



**Figure 3:** Our typology of gamers regarding their purchase motivations

Interestingly, we could not find a group of game-item buyers that would emphasize merely functional motivations and, simultaneously, downplay hedonic motivations (positioned in the lower right-hand corner of Figure 3). Our findings depart from prior knowledge, since the extant gamer typologies have identified high functionality-oriented gamer groups labeled as dominators or killers (Bartle, 1996; Hamari and Tuunanen, 2014). We expected such a group to exist also regarding gamers' purchase behavior, especially in the context of fast-paced and performance-centric FPS games.

Additionally, in contrast to the previous typologies, we did not find strong social motivations for game item purchases. Even though some gamers are socializers and their general gaming behavior is motivated by socializing (Bartle, 1996; Hamari and Tuunanen, 2014; Yee, 2006), it seems that such a motivation does not currently reach purchasing behavior, at least in FPS games. We consider this finding somewhat paradoxical because some FPS games accentuate social aspects and provide gamers with various game items as social tools to facilitate communication and teamwork.

The first group of our typology, aesthetes, is positively oriented toward game item purchases. As these gamers highlighted hedonic aspects and disregarded functional aspects, they shared some similarities with gamers who play games to reach immersion by, for example, escapism or getting absorbed in the game (Bartle, 1996; Hamari and Tuunanen, 2014). Thus, our findings extend this prior knowledge about highly hedonic-centric gamers to the context of in-game purchases.

The second group of gamers, adventurers, appreciated various hedonic attributes in game items, but also saw some potential motivational boosts from functional attributes. Adventurers also reported a high likelihood of purchasing game items in the future. This group could be

interpreted to reflect exploration, which on the one hand concentrates on appeal, curiosity, and playing around, but on the other hand may involve some interests related to rationality and problem-solving (Hamari and Tuunanen, 2014).

The third group, performers, was motivated by functional aspects, especially performance and power, with a lesser focus on hedonic aspects. Performers resemble achievement-centric gamers (Bartle, 1996; Hamari and Tuunanen, 2014; Yee, 2006), who focus specifically on in-game goals and advancement in the game. On average, they reported to be only somewhat likely to purchase game items in the near future. When they do, it seems that they purchase game items mainly to perform better, but they also appreciate the additional playfulness and visual enjoyment that the items might bring. Even though these motivations are partly in line with the group referred to as dominators or killers (Bartle, 1996; Hamari and Tuunanen, 2014), such a group would probably use game items just as tools to do damage to others (i.e., for purely functional motivations).

Finally, our typology presented an important, yet previously unmentioned gamer group: critics. This gamer group is radically different from the others: even though critics might enjoy playing the actual game, they basically disagreed with any motivations to purchase virtual game items. It seems that they would not even like to have the option to purchase game items. There may be a variety of specific reasons behind such critical behavior; some gamers oppose game item purchases because they consider it to be harmful in preserving the games' "magic circle" (Castronova, 2004, 192) or perceive it as cheating (Lehdonvirta, 2005).

## **5.2 Practical Implications**

There are at least four implications for the providers of games and similar virtual service environments. First, game providers could take advantage of the resulting typology by customizing their game item offerings according to the gamer types. Currently, many game providers already sell game items for different purposes (e.g., for performance boost or aesthetic appeal), but providers could take even further steps to offer gamers what they really wish to purchase.

Second, many game providers and designers seem to assume that players are likely to spend money on virtual items that raise their performance quickly and increase their power in the game (Fields and Cotton, 2012; Lehdonvirta, 2009; Oh and Ryu, 2007). However, we could not find support for these assumptions. In contrast, we found that hedonic aspects motivated the gamers that were most likely to purchase game items. Therefore, we suggest game providers carefully revisit their potential assumptions on functional motivations.

Third, our findings indicate that hedonic motivations are highly essential for game item purchases—especially visual appeal, humor, playfulness, and hedonic self-expression. Previously, aesthetic items have been assumed to be essential mostly in rather visually-oriented virtual worlds such as Habbo Hotel, where users can buy decorative furniture or cute pets (Lehdonvirta, 2009; Kim et al., 2011). Naturally, one would expect that individuals' perceptions of visual appeal regarding cheerful virtual worlds are different from those regarding quite harsh game environments, such as FPS games. However, our findings contradicted this assumption and, thus, may help FPS game providers to promote certain hedonic aspects suitable for FPS games.

Fourth, there is a group of gamers who quite radically critique the current system of game item sales. Even though this group seems to be extremely difficult to convert into game-item buyers,

at least game providers and designers could acknowledge these gamers and try to reduce the amount of their negative associations regarding purchasing game items.

### **5.3 Limitations and Future Topics**

There are certain limitations regarding this study. First, our sample size could have been larger. However, our sample was sufficient enough for our research task to identify different gamer groups. Second, our sample consisted mainly of young males. Even though young men are currently the dominant user group for FPS games, it would be important to study other demographic groups that prospectively play FPS and other games in the future. Third, we focused merely on the context of FPS games. Our focus on a certain game genre could have affected our results—for example, the fast-paced nature of FPS games could emphasize some motivations more than others.

In the future, we encourage researchers to examine whether our findings are applicable to other virtual service environments than just games. For example, it would be interesting to compare our typology of gamers against similar typologies of virtual world item buyers. Also, as this study focused on computer games, it would be tempting to examine whether the device makes any difference to gamers' purchase motivations. Thus, future studies could focus on gamers' motivations to conduct mobile in-app and in-game purchases. Finally, it would be worthwhile to dive deep into the perceptions and motivations of the group labeled critics. Researchers could explore the reasoning behind critics' negative attitudes toward in-game purchases with qualitative methods such as laddering interviews.

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## Appendix 1: Questionnaire

Main Motivation	Attribute	Questionnaire Item
<b>Question: Do you agree or disagree with the following reasons for buying virtual goods in FPS games? (Five-point Likert scale, from 1 = strongly disagree to 5 = strongly agree.)</b>		
<b>Functional</b>	<i>Quality</i>	They function reliably. They are high quality.
	<i>Price</i>	They are reasonably priced. They have good value for the money.
	<i>Performance</i>	They raise my performance quickly. They help my team to win.
	<i>Character competency</i>	They increase my power in the game.
	<i>Strategic planning</i>	They facilitate strategic planning in the game.
	<i>Game balance</i>	They help to keep game balance.
	<i>(Social) Team play support</i>	They help to work as a team. They provide effective communication tools for the game.
<i>(Social) Functional self-expression</i>	They make me respected by other players.	
<b>Hedonic</b>	<i>Visual appeal</i>	They are aesthetically appealing. They make my character look better.
	<i>Sound effects</i>	They have enjoyable sound effects.
	<i>Playfulness</i>	They make the game more exciting.
		They stimulate my curiosity.
		They increase immersion in the game.
	<i>Humor</i>	They add humor to the game.
	<i>Story</i>	They fit well with the game lore.
	<i>Cultural reference</i>	They can add cultural nuances to the game.
<i>(Social) Rarity</i>	They are rare.	
<i>(Social) Hedonic self-expression</i>	They make my character look cooler for others.	

**Table 6:** Online questionnaire statements