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# Interactivity of 3D social Internet as a marketing tool

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## 1. Introduction

Until recently the 3D Internet interface has been characterized as an element within the traditional web-site used predominantly by companies selling clothing or cars. However business is waking up to the idea of new marketing possibilities created by the 3Dimensional Internet. Virtual worlds such as Second Life, There, HiPiHi have set a high standard by offering significantly more than 3D changing rooms to view your most recent purchase or imaging the car in your driveway. They have actively transformed the traditional Internet interface from 2D 'flat' web-sites into new worlds with their own societies, economies, competitions and markets of real and purely virtual products. Virtual worlds are defined "as immersive, three-dimensional, multi-media, multi-person simulation environments, where each participant adopts an alter ego and interacts with other participants in real time. World activity persists even if a player is off-line" (Wagner 2008, p. 263). Communications within the virtual world is a background for the creation of new social ties and a new virtual community. Virtual worlds have been subject to different scientific research (e.g. as an educational tool, new market, social phenomenon, environment for teamwork), still very little is known about how 3D virtual environment affects the users' interaction with companies and influences customers' attitude towards brands. Are the rules for interacting the same in virtual worlds as on the traditional web-sites? On the traditional web-site the interactivity is increased by hyperlinks and clickable buttons, graphics, animation, channels for on-line communication, easy navigation, personalization, design and color, speed, search tools, relevance of topic and so on (Sohn et al. 2007). In the 3D Internet 'clickable buttons' are transformed into 'clickable and movable 3D objects' and 'graphics' are turned into 3D virtual objects which can be explored 'inside and outside'. Moreover the users presence on a traditional web-site is limited to a nickname or photo. Inside the 3D virtual world the user experiences virtual space as a 3D avatar and this environment allows the user to be immersed in cyberspace: touching objects, moving them, making changes or even building them. The virtual word is a new marketing platform. Companies trying to embrace virtual worlds in their marketing research and promotion or sales strategy face many new challenges. They have little experience (and often knowledge) as to how to develop communication with potential customers and thus do not fully realize the potential offered by the interactivity in the virtual world. The aim of

this chapter is to examine the nature of 3D Internet interactivity and to discuss chosen aspects of virtual worlds' marketing. The material includes both theoretical and empirical issues. The survey presented and consequent discussion focuses on an analysis of one of the biggest virtual worlds for adult users - Second Life and the analysis refers to companies which both operate in the real market and implement Second Life as their marketing tool. The following section presents a proposed model of interaction between company and virtual world's users. The third section describes the methodology used in the survey. This is followed by two sections focusing on analysis of obtained data and their interpretation in the context of the limitations of the survey and future research. The sixth and final summarizes the findings.

## 2. The nature of 3D marketing Internet interactivity

### 2.1. The model of building interaction between avatar and company within the virtual world

In order to obtain marketing objectives (see Fig. 1) companies can use both passive and active means of interaction. Passive interaction requires only observation within virtual worlds e.g. avatars hang out in the virtual company's land and they simply watch graphical objects. This situation is similar to brand exposure on television, with the exception that in virtual worlds the potential customer is immersed in the environment. Active forms of interaction demand that the user be 'a co-creator' and becoming a 'prosumer' of interaction (prosumer is involved in the process of production). 'Active-creation' interactions refer to building objects within the virtual world e.g. a company organizes a contest based on the user's building skills. 'Active – without creation' interactions demand a higher level of engagement in interaction from the user to that of 'passive interaction', but it does not demand building skills. For example an avatar can wear a garment (T-shirt, shoes) with the company logo or use an object with company's logo (drive a car of a particular brand etc.). If the user estimates company interactivity as valuable (in fig. 1 the variable 'perceived value of interactivity'), the chances that avatars will continue to build a relationship with the company increase. The value of interaction is a similar construct to the value of a service encounter. According to Heinonen (2008), a service encounter has a value for customers both in process and outcomes elements. In the virtual world the process is linked with the avatar's effort in interacting with the company and the resulting outcomes lay in areas such as entertainment, making social connections or educational value.

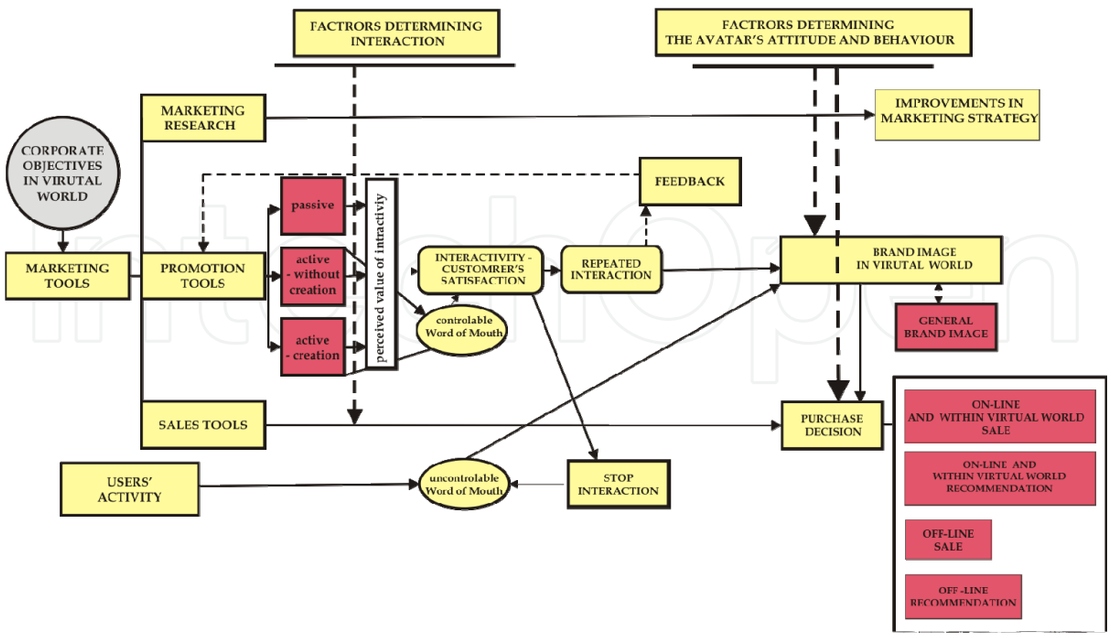


Fig. 1. The model of interaction between company and users within Second Life

Positive contacts lead to a better perception of the company's brand and actively enhance potential purchasing decisions in markets. The term 'markets' is used as opposed to 'a market', is because the presence of a real brand within the virtual world can affect the image of the company in three markets: (1) in the virtual world's market, (2) 'real market' (Castronova (2002) uses the term Earth market) and (3) on-line market offered by traditional web-sites. Active forms of interaction, such as the taking part in discussions by avatars, creates 'Word of Mouth' about a particular brand (WOM) and the reputation of a brand spreads among users. Apart from this controllable WOM (from the company's point of view), many strong and well-known brands (such as Addidas, Sony, Mercedes) are created by an individual user within the virtual world and this way the uncontrollable World Of Mouth for the brand is being formed (unWOM). Both controllable and uncontrollable WOM affect brand image and a consumer's behaviour, that is a user's brand recommendation and purchase. Other factors such as knowledge about the brand from the real market or a customer's budget also play a role in the process of building a brand image (in the fig. 1 – 'factors determining the avatar's attitude and behaviour'). Although the process of building digital WOM within a 2D web-site has been the subject of many studies (e.g. Brown et al. 2007), many aspects about building and spreading WOM within a 3D Internet are still unknown. Within literature also little research exists as to how a company's activity within virtual worlds influences the marketing performance of the brand, specifically selling or brand value (e.g. Arakji & Lang (2008) presented an interesting model of Avatar Business Value, Barnes & Mattsson (2008) analyzed the virtual brand value). The way of describing the nature of the virtual world as presented above (as in the fig.1) refer to a deterministic way of seeing the correlation between indicated factors. This way of presenting interrelations between variables is helpful especially in designing a survey which could show the indicated correlations, but it is necessary to point out that there is also a different

approach focused on a nondeterministic way of perceiving the usage of advanced technology (as in Adaptive Structuration Theory – DeSanctis&Poole, 1994 or in the interesting model of Metaverse Research founded by Davis et al. 2009).

### 2.2. The characteristics of interactivity within virtual world

Referring to the 'media richness' theory, the 'richness' of the Second Life environment, within the virtual world is based on a combination of graphics, sound and communication tools, which can create a different experience in comparison to traditional web-sites. For example, if an avatar is falling down into the water the immersive 3D space allows the user to 'experience' the fear of this accident, more positively an avatar can feel the joy of dancing (maybe this is a reason why Second Life is useful for autistic people – Biever 2007). Some companies activity within the virtual world can be viewed as a form of product placement. There are some variables characterizing product placement in traditional media such as modality, congruity with the plot, type of program or placement prominence (Cowley & Barron 2008). Some of these variables can be used in analysis of interactivity in the 3D Internet. For example, interaction can be assessed as congruent with the type of brand (e.g. offering virtual cars is congruent for a car manufacturer or dealer). Placement prominence can refer to the centrality of the product's presentation in the virtual land (e.g. vending machine with cars is a central point of Nissan virtual land). Finally, duration of the interaction refers to the avatar's exposure to particular stimuli to the extent that organizing a concert is a form of time limited interaction, but offering a virtual car is not. A traditional web-sites interactivity is often limited to the contact user-website, while within the virtual world, the community is the basis for the avatar's virtual existence. Hence, the next aspect of interactivity involves cooperation between the avatars themselves and cooperation between a company and a group of avatars (e.g. a group of brand users).

### 2.3. The factors influencing avatar's response to company's interaction

Before the avatars decide to interact with a company, they ask themselves: 'Am I able to take part in this interaction?', 'How much effort should I put in in order to take part in this interaction?" and 'Is the outcome of this interaction worth it?' On the other hand companies look to a spectrum of factors affecting the avatar's willingness to respond to a company's invitation. One of these factors is a user's knowledge about Second Life e.g. a user must know how to use an avatar's 'inventory' in order to wear a company's T-shirt or keep the model of its virtual car. Another factor is the user's level of acceptance of marketing activity inside a virtual world. Some users, perceiving the virtual world as fantasy, reject the companies' presence and this means that the consumers can reject interaction with company. Research conducted on traditional web-sites (Sohn et al., 2007), identifies the factor of 'expected interactivity'. This factor can play a significant role in an evaluation of virtual interaction. Avatars visiting the land of a well-known car manufacture expect some interaction connected with driving a virtual car, while visiting the land of an IT company avatars expect free courses about building and scripting in Second Life. Therefore, an avatar's assessment can be higher when a company's interactivity exceeds expectations. These three elements: expected interactivity, avatar's knowledge and users' acceptance of virtual world are only examples of factors which may influence the analyzed process of interaction.

## 3. The research questions and method

The aim of this empirical study was to examine chosen aspects of a virtual world's interactivity. In this study the following specific questions were formulated: (1) What forms of interactivity are preferred by avatars? (2) Is there any difference in avatars' preferences between active and passive forms of interaction? (3) Can company's interactivity influence brand image within the virtual world in such a dimension as trustworthiness? (4) How do interactions influence the customer's behaviour in three areas: buying a product in the real market, recommendation of a brand to another user and repeated contact with a company in the future? The two first specified questions are connected with the avatar's preference of interactions embedded in the proposed model (fig.1) as variables: 'passive interaction', 'active without creation', 'active – creation' and 'perceived value of interactivity'. The next following two questions refer to the outcomes in the proposed model: brand image in the virtual world and the link indicated between interactivity and the avatar's behaviour within the virtual world, on-line and the real market. The survey was conducted within the virtual world of Second Life. The procedure was based on the following steps: (1) on the basis of observations of companies' activities within the virtual world the possible forms of interactions between company and avatar were identified, (2) respondents - avatars visited the lands of two chosen companies and then avatars were redirected to Jan Kochanowski University's web-site in order to complete a questionnaire, (3) in the first part of the questionnaire avatars evaluated different forms of interactions without referring to any specific company, (4) In the second part of questionnaire avatars assessed the visited companies' interactions and assessed their attitude to companies' brands. Brand attitude can be assessed in many dimensions, but research about e-branding, indicated brand trustworthiness as one of the crucial elements of brand perception within the e-market. For instance Kossecki (2004) analyzed trust among other factors enhancing e-purchase, Kim, Cho, and Rao examined the role of trust and perceived benefit in e-commerce (Joia & de Oliveira 2008). Steward (2003) pointed out that the novelty of a distribution channel may weaken customer's trust. Presumably in the virtual world, customers are less willing to trust a company than at a traditional web-site. Subsequently customer's brand attitude is connected with behaviour such as 'brand recommendation, 'intention to buy product' and 'willingness to repeat contact with a brand'. Reichheld (2004) found that 'on Earth economy' the question about product's recommendation is a very good indicator for customers' loyalty and the company's growth. Similarly in the virtual world two, examined in the survey, variables - 'recommendation of company to other avatars' and 'willingness to repeat contact with company' can be good indicators for the customer's loyalty and brand relevancy to customer. 'Intention to buy a product in real life' can be a strong indicator of the avatar's brand perception and consequently the indicator of company's marketing effectives within virtual world. The survey was conducted in February 2009 and 51 Polish avatars responded to the questionnaire. 94% of respondents (48) have been living in Second Life for at least 6 months (the date of birth of avatar is visible in the avatar's profile), thus presumably most respondents are experienced in virtual interactivity. In this survey avatars visited lands of two companies: (1) well-known car manufacturer Nissan and (2) Polish language school Lingualand. These firms have existed in Second Life for at least a few months, have strong links with the real market and represent different business sectors (auto manufacturer and educational service).

## 4. Preferred forms of interactivity

In the first part of questionnaire avatars answered two questions: (a) 'If the company proposes interaction 'X', how willingly do you respond?', (b) 'If the company proposes interaction 'X', does this interaction encourage you to repeat contact with company?' All questions were scaled from 1 to 5 points (1 being the lowest mark, 'I do not like'; 5 – highest mark, 'I do like'). This research showed that the avatars' responses significantly vary compared to different interactions. Three active form of interactions: 'taking part in events organized by a company', 'conversation with salesmen within the virtual world' and 'taking part in a contest which does not demand building skills, but money prize is offered' - strongly influence an avatar's willingness to participate in interaction (see Table 1). Three passive form of interactions: 'The visual display of the company's land', 'interest in the company's product presentation' and 'playing nice music' also have a significant positive effect on avatars' participation in interaction. The statistical analysis shows that there is no significant differences between the distribution of interaction which received the highest grades (all six interactions both passive and active). Therefore all six forms of interaction are similar in the avatar's perception ($p>0.05$ Wilcoxon test). On the other hand the avatars do not appreciate the following forms of interactions: (1) within the active interactions: 'offering a free product trail', 'giving feedback to the company e.g. writing notes on a board or filling a questionnaire' and (2) within the passive interactions: 'video or slide presentations and 'receiving a company's landmark' (landmark is a virtual address within Second Life). 'Receiving the landmark' is an interaction evaluated significantly lower ($p<0.05$) in comparing it to both active interactions and the other passive form (video and slides). The active form of 'offering a free product trial' was assessed significantly higher than slides and video presentations and receiving landmarks ($p<0.05$). This study also showed a huge gap between an avatar's willingness to interact with a company for the first time (in the table nr 1 variable 'mean 1') and then repeating the interactions (variable 'mean 2' – the variables tested using Wilcoxon test: p – presented in the table, the distributions of variables are not normal). This result proved a well-known marketing principle – it is much easier to attract customer's (in this case avatar's) attention than to create a long-lasting relationship between customer (avatar) and company.

| Form of interaction | Expected response from an avatar | Mean (1) | Mean (2) | p (1/2) |
|---|---|---|---|---|
| Active interaction | | | | |
| Organizing events within SL such as concert, meetings, presentation, debates | Taking part in the event organized by company, positive recommendation to other users | 4,37 | 3,94 | 0,00 |
| Avatar can talk with sales people who are able to answer customer's question. | Avatar's interest in company's products. Giving feedback about company's product | 4,25 | 3,86 | 0,01 |
| Contest with a money prize (the contest does not require building skills) | Taking part in the contest | 4,12 | 3,94 | 0,15 |

| | | | | |
|---|---|---|---|---|
| The possibility of placing an order for real products within Second Life (in the same way as at a traditional web site) | Ordering real company's products within SL | 3,75 | 3,53 | 0,13 |
| Offering virtual objects within the virtual world (not necessary connected with real company's product) | Acceptance and usage of an object e.g. driving virtual car or wearing virtual garments with company logo | 3,53 | 3,10 | 0,00 |
| Organizing contests requiring building skills | Taking part in contest | 3,20 | 3,00 | 0,16 |
| Giving feedback to company e.g. writing notes on a board or completing questionnaire | Engaging avatar in giving feedback to company | 3,20 | 2,76 | 0,00 |
| Offering a free product's trail (the virtual product is connected with real company's product) | Virtual consumption of product | 3,18 | 3,12 | 0,81 |
| Passive interaction | | | | |
| Interesting presentation of a product on a company's virtual land | Visiting a company's land | 4,24 | 3,69 | 0,00 |
| Visual display of a company's land | Visiting a company's land | 4,10 | 3,71 | 0,01 |
| Playing nice music on a particular land | Visiting a company's land | 4,10 | 3,55 | 0,00 |
| Receiving detailed information about an object | Visiting a company's land. Arousing avatar's interest in a company and its products. | 3,90 | 3,55 | 0,01 |
| Receiving information about a company within virtual world, but outside its land (eg. billboard on merchants' land, ads within search engine) | Visiting a company's land | 3,47 | 3,12 | 0,01 |
| Communications between a company and the users who participate in the company's group | Avatar's response depends on the proposed interactions within the message e.g. visiting a new products' exhibition | 3,10 | 2,75 | 0,00 |
| Video or slide presentations on a company's land | Watching the presentation | 2,90 | 2,59 | 0,01 |
| Receiving the landmark | Repeated visits to a company's land | 2,65 | 2,49 | 0,20 |

Table 1. The assessment of different forms of interactions

## 5 The case of Nissan and Lingualand

### 5.1. The assessment of companies' interactivity

Respondents evaluated marketing forms of interactions offered by two companies: Nissan and Lingualand. Nissan set up its virtual business on an virtual island. Its interactivity gives visitors a large spectrum of active and passive interaction: (1) the company offers a free virtual car - avatars can get it when they input a 'secret code' into a special vending machine, (2) the avatars can drive the virtual car on a specially designed racing track , (3) users get more information about Nissan if they click on a hyperlink connected to the virtual island and are redirected to a traditional web-site. Lingualand is a brick-and-mortar Polish school, set up in the Polish city of Krakow and they conduct their business in the real world. The school has also set up its virtual replica within the Polish part of Second Life – Second Poland. Survey respondents evaluated both companies one for active interaction (variable: 'offering free product trail') and for passive interactions (variables: 'visual company's features', 'the features of surrounding area', 'product presentation', 'sufficiency of information about products', 'reliability of information about product' and 'information about company at websites outside SL'). The analysis of interactions showed that there was a statistically significant difference between the assessment of Lingualand and Nissan, except one variable: 'information at the web-site outside SL' (see Table 2, in the analysis - the distribution of variables were not normal, differences tested using Wilcoxon test). The virtual school Lingualand was better evaluated than Nissan , although some interactions do not have the same meanings for both companies: (1) Lingualand does not offer material products, therefore 'product presentation' can not been estimated, (2) Nissan built its presence in a separate virtual land, whereas the Lingualand office is only one element of the whole land – virtual Krakow, hence, the 'perception of the surrounding area' was included in Lingualand's analysis. The meaning of the variable 'offering free product trial' is also different for Nissan and for Lingualnad. For Lingualand the avatars can attend a virtual language lesson (e.g. English and Italian), thus the virtual experience is a real educational service. In the Nissan land virtual consumption does not mean driving real car, but only playing with a virtual one. The results showed that there was no differences in assessment of information about a company at an outside website (avatars can find the link to 'outside' web-site within Second Life).

| | The interaction (code for interation) | Nissan (N) | Lingualand (L) | p Wilcoxon |
|---|---|---|---|---|
| | | Mean/Median/SD | | |
| Passive interactions | A company's visual features (F1) | 3,41/4/1,22 | 3,82/4/1,18 | 0,05 |
| | The features of the surrounding area (F2) | - | 4,06/4/0,95 | - |
| | Presentation of the product (F3) | 3,94/4/1,03 | - | - |
| | The spectrum of information about products – is the information sufficient? (F4) | 3,31/3/0,91 | 3,92/4/0,84 | 0,00 |
| | Reliability of information about the products (F5) | 3,51/4/0,88 | 3,98/4/0,99 | 0,01 |
| | Information about a company at the traditional websites (F7) | 3,53/4/0,90 | 3,69/4/0,99 | 0,33 |
| | Active interaction - Offering free trial product (F6) | 3,73/4/1,11 | 4,39/5/0,98 | 0,01 |

Table 2. Comparison between companies' interaction within Second Life

On the basis of data obtained from the first part of this survey and the assessment of companies, Nissan and Lingualand, interactivity can be evaluated within two dimensions: weak and strong points of a company and the importance of interactivity. Figure 2 graphically represents which virtual companies' activity should be maintained at the highest level because of its importance (the code of variables as in table 2, Lingualand marked 'L' and red, Nissan 'N' and green, the interaction 'information about company outside SL' was not evaluated in aspect of importance, the cross point is the mean of assessment of companies interactions and the mean of importance of all interactions).

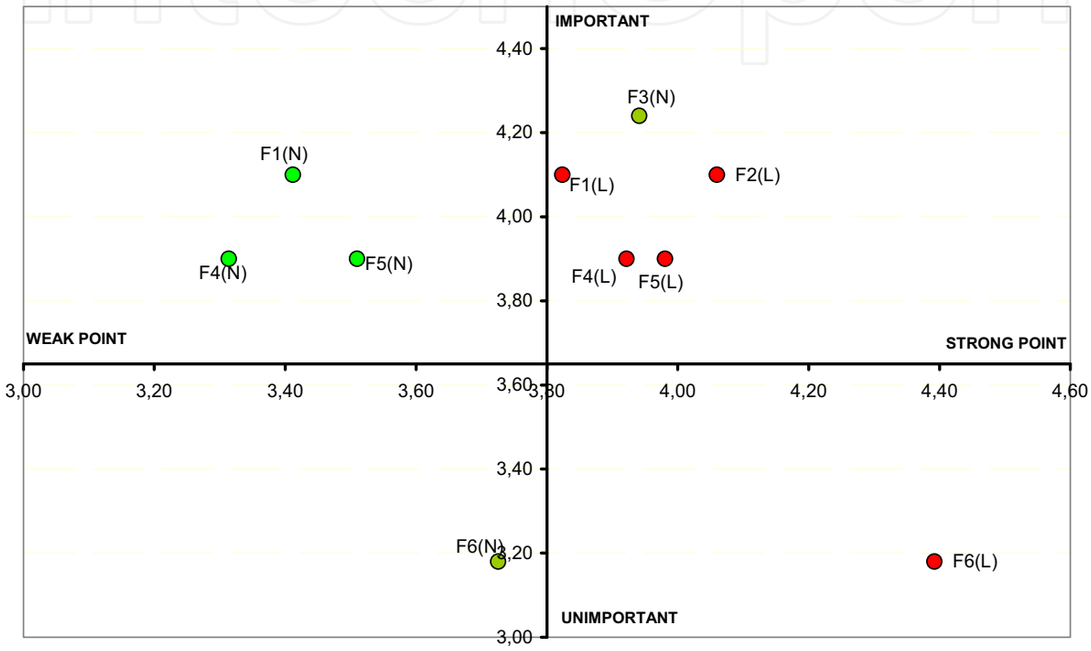


Fig. 2. Comparison between strong and weak companies' points and the importance of interactions

### 5.2. Analysis of brand trustworthiness and customer's behaviour

The avatars answered the questions about Nissan and Lingualand image and their attitude to the brands. The analysis shows that there are statistically no significant differences between distributions of such variables as: 'trust in the company', 'recommendation of a company to other avatars' and 'willingness to re-visit the virtual company'. For Nissan it would be difficult for respondents to assess how virtual activities would affect their willingness to buy products, therefore users were asked for the assessment of the link between virtual activity and general brand image. In Lingualands school the situation is different. After attending virtual lessons, the users can asses whether the image of the school (if it were real in their neighborhood) is appealing enough to sign up for real classes. Only in this area are respondents' answers significantly different statistically (Table 3, Figure 3). The survey shows that although there are significant differences between perception of interaction between Nissan and Lingualand, the avatars' bonds to the brands in most dimensions are similar.

| The interaction | Nissan (N) | Lingualand (L) | p. Wilcoxon N/L |
|---|---|---|---|
| | Mean/Median/SD | | |
| Trust in the company (R1) | 3,86/4/0,98 | 3,82/4/0,97 | 0,75 |
| Virtual presentations positive effect on Nissan image /Intention to sign up for real language lessons (R2) | 3,75/4/0,89 | 3,27/3/1,27 | 0,02 |
| Recommendation of company to other avatars (R3) | 3,75/4/1,02 | 3,84/4/0,90 | 0,57 |
| Willingness to re-visit the virtual company(R4) | 3,55/4/1,21 | 3,80/4/1,00 | 0,21 |

Table 3. The differences between the perception of brand image and consumer's attitude towards brands

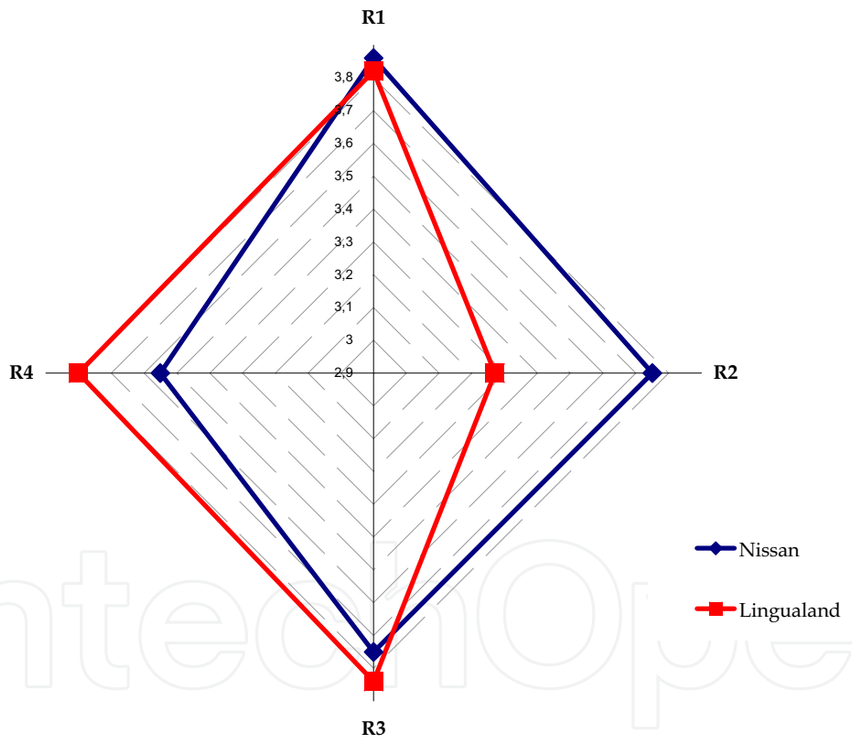


Fig. 3. Four dimensions of consumer's brand attitude and behaviour

Among the tools of the virtual Lingualand marketing, avatars appreciate the possibility of attending free English lessons – this active form of interaction is estimated significantly higher than others (see Table 2). However, the analysis shows that 'the intention to sign up to real lessons' was assessed significantly statistically lower than the three other aspects of brand: 'trust', 'recommendation visiting' and 'willingness to re-visit the company'. Analysis within the interactions offered by Nissan shows that avatars especially appreciate the

uncommon form of product presentations – vending machine for distributing the virtual car. In the analysis of Nissan brand outcomes, there are no differences between the four analyzed variables - 'trust', 'virtual presentation has a positive effect on Nissan image', 'recommendation of company to other avatars' and 'willingness to re-visit the company' ($p>0.5$ Wilcoxon test). In the next step of analysis the correlation between interaction and customer's response was assessed (Table 4, Table 5, Figure 4). Results for Nissan show that a strong correlation exists between (a) the visual company's virtual features and creating a positive image in customer's mind and (b) between offering a virtual car and recommendation to other avatars to visit Nissan land and between (c) presentation of cars and recommendation visit. In Lingualand most examined variables are highly correlated and the results are: (1) Six examined factors (reliability and sufficiency of information, the offer of free language classes, the features of the surrounding area, information about the school outside SL) very strongly correlate with the recommendation of school services to other avatars. (2) Four examined factors (reliability and sufficiency of information, offering free language classes and features of surrounding area) strongly correlate with recommending other avatars visit school and also with the intention of re-visiting the school themselves. (3) All indicated interactions strongly correlate with trust.

| | F1(N) | F6(N) | (F3(N)) | (F4(N)) | (F5(N)) | (F7(N)) |
|---|---|---|---|---|---|---|
| Trust in company | 0,22 | 0,35 | 0,34 | 0,06 | 0,42 | 0,20 |
| The effect of virtual presentations on Nissan image | 0,59 | 0,21 | 0,37 | 0,16 | 0,38 | 0,47 |
| Recommendation of visiting Nissan land to other avatars | 0,47 | 0,51 | 0,51 | 0,44 | 0,44 | 0,44 |
| Willingness to re-visit Nissan land | 0,47 | 0,47 | 0,44 | 0,37 | 0,38 | 0,23 |

Table 4. Correlation between Nissan interactivity and avatars' attitudes (Gamma correlation – codes for variables as in table 2)

| | (F1(L)) | (F2(L)) | (F6(L)) | (F4(L)) | (F5(L)) | (F7(L)) |
|---|---|---|---|---|---|---|
| Trust in company | 0,49 | 0,60 | 0,64 | 0,77 | 0,80 | 0,54 |
| Intention to sign up for real courses in real life | 0,36 | 0,47 | 0,30 | 0,50 | 0,50 | 0,51 |
| Recommendation of visiting school to other avatars | 0,56 | 0,85 | 0,85 | 0,90 | 0,84 | 0,65 |
| Intention to re-visit the school | 0,56 | 0,79 | 0,70 | 0,76 | 0,81 | 0,70 |

Table 5. Correlation between Lingualand interactivity and avatars' attitudes (Gamma correlation – codes for variables as in table 2)

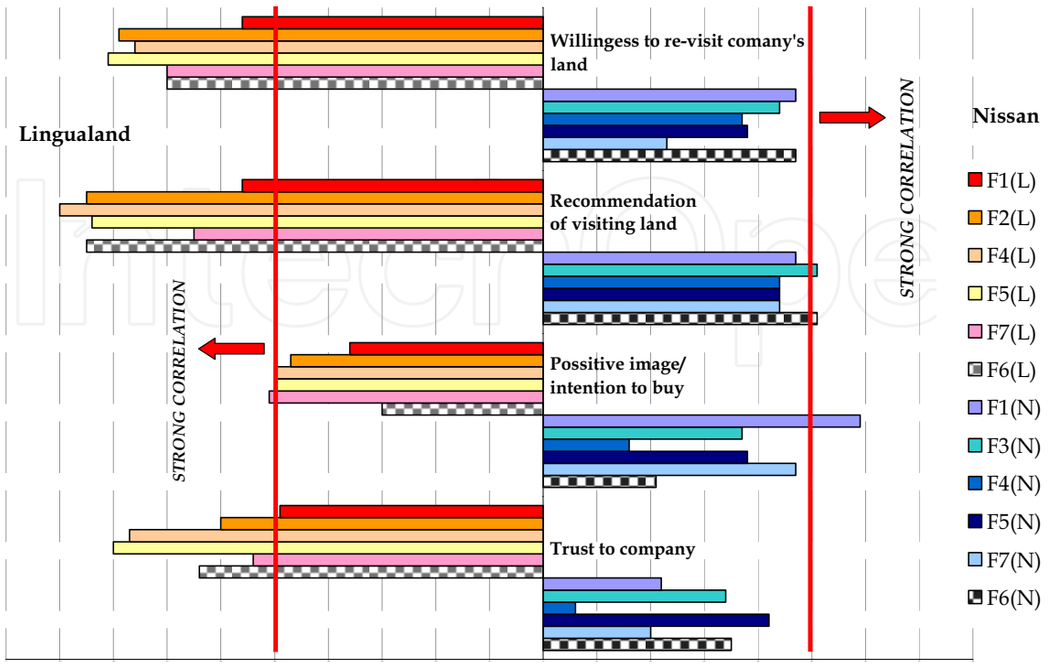


Fig. 5. The correlation between variables

The results show that despite the statically significant differences between assessment of companies' interactions, the avatar's brand attitude is similar to both companies. What are the possible explanations for this? The following section indicates some factors which can play a role in this survey. Factors are presented according to the scheme: (1) the factor influencing the link between interaction and brand attitude, (2) reference to this study results, (3) marketing implications, (4) study limitation and future research in a discussed field.

### 5.3. Indicating factors which may moderate the avatar's attitude to the brand

#### 5.3.1. Brand familiarity

(1) The factor: The 'brand familiarity' creates the background of perception of interactivity ('brand familiarity is understood as 'as the number of brand-related direct or indirect experiences that have been accrued by the consumer' - Park & Stoel, 2005). This factor refers to the dichotomy of well known brands vs. unknown brand and also global vs. local brand. (2) Reference to the results of this study – Correlation analysis shows that avatars' attitude to well-known manufacturer Nissan is not based on proposed interaction. On the contrary, Lingualand, which is known from virtual world (few avatars have a chance to the know company in the real world), built its image through its marketing interactivity within the virtual environment. For this company, analysis shows very strong correlation between proposed interaction and brand attitude (3) Marketing implications – The meaning of interactivity in the virtual world's is different for well-known brands than for unknown brands. Avatar's recommendations of well-known brand or willingness to repeat contact may depend less on proposed interactions. For lesser known brands, their interactivity

should create user's awareness of brand. (4) Study limitation and future research - Future study should examine the influence of previous brand image on brand attitude within the virtual world. Further study should use a larger sample including different business sectors, and also examine differences between brick-and-mortar companies and purely virtual ones.

### 5.3.2. Avatar's motive

(1) The factor: Avatars form highly diversified communities, hence the perception of interactivity and its outcome – brand attitude - are different for various segments of avatars. (2) Reference to this study - Looking at the 'average' image of a company and an 'average' consumer's attitude and not distinguishing the data obtained from different segments led to unclear results. In this study the additional question - 'If a company from the real world organizes language courses in Second Life, how willingly will you take part?' can be used as a criteria of segmentation (This question was included in an additional part of the questionnaire, not referring to Lingualand or any other particular company, a scale from 1 to 5 points was used). Implementing this question into analysis it is possible to distinguish two different segments: the group of users who answered 5 (called 'educationally-orientated') and the group of users who answered 1 ('non-educationally-orientated'). The analysis showed that the intention to sign up for real courses offered by Lingualand is significantly higher in the group of 'educationally-orientated' avatars than 'non-educationally orientated' users (U Mann-Whitney test, $p<0.05$). Moreover, the differences between both segments are significant in the assessment of other Lingualand dimensions: brand trustworthiness, making recommendations to other avatars, willingness to re-visit the land (there are no differences between users choosing 4 and 5). (3) Marketing implications - This finding confirms that the 'average' customer does not exist in the market of the virtual world. Proposed interactions should take into account the specific needs of a particular segment of users. (4) Study limitation and future research –The findings of this survey are limited by a small chosen sample. Hence it was not a cross-cultural study and potential cultural differences among segments can be overlooked. Future research should examine different factors which can be used as segmentation criteria such as user's attitude to interaction or a user's self-expression (e.g. Arakji & Lang. (2008) argued that the avatars' needs depend on the image which user wants to create within virtual world - adopting human avatars or non-human).

### 5.3.3. Facilitating factors

(1) The factor: Facilitating factors. Brand perception is not a simple sum of the proposed interactions and one particular interaction can change overall perception. (2) Reference to this study - No elements on Nissan land were particularly negatively assessed, therefore a positive element, such as with the vending machine, can strongly influence the perception of the brand. (3) Marketing implications – Maybe it is enough to create one engaging form of interactions that is worth seeing. It may turn out that 'overloaded' interactivity is assessed lower than the more simplified and easily noticeable interaction. (4) Study limitation and future research – Future research should be focused on indicating different facilitating factors including those not connected with graphics.

### 5.3.4. Avatar's interactivity expectation

(1) The factor: Avatar's interactivity expectations, (2) Reference to the study results - Avatars visiting the land of a well-known car manufacture expect interactivity connected with a virtual car. But while avatars visit a school their expectations may not be so clear – they would expect free lessons or slide or video presentations or some other forms of interaction. Hence, the element of 'being surprised' can play a role in the higher assessment of interactivity of Lingualand, but it does not lead to a higher assessment of the brand in outcomes such as trustworthiness or recommendation (3) Marketing implications – 'interactivity expectations' depend on the product category. Maybe the best working interaction should trigger the avatar's curiosity and surprise them. 4) Study limitation and future research –Future research should examine the avatar's interactivity expectation toward a particular brand in order to find a 'reference point' in perception and then from that perspective examine the proposed interactivity.

### 5.3.5. Cooperation

(1) The factor: Avatar's willingness to cooperate with others. Interactivity can be differently perceived when a group, not a single user, is involved. (2) Reference to this study – Lingualand interactivity which was based on cooperation was highly assessed. Also in the first part of the survey avatars positively evaluated interactions such as organizing concert, debates or contest, which require social contact. (3) Marketing implications – Companies can build their own virtual communities within the virtual world and this way create their own 'fan-clubs'. 4) Study limitation and future research - . Future research should focus on the role of cooperation between avatars in the process of building marketing interactivity.

### 5.3.6 Emotions

(1) The factor: Emotions play a significant role in building an avatar's attitude toward a brand and perception of interactivity, (2) Reference to the study results - In this survey the avatar's response to interaction was defined in behavioral aspects, omitting many emotional aspects. It is possible that primary interactivity influences the users' emotions and then the users' behaviour. This study did not show this process. (3) Marketing implications – The avatars can be 'moved' from 'liking' the brand to 'buying' or 'recommending brand' thanks to a company's interactivity. (4) Study limitation and future research - Future studies should also examine the aspects of emotions and not only focus on the beliefs and behavior.

### 5.3.7 Avatar's attitude to 'real world'

(1) The factor: Avatar's attitude to the virtual world can influence the perception of a company's interactivity, (2) Reference to the study results - The presented survey shows that avatars are unwilling to transfer consumption of a product from the virtual world into real world - in this analysis to sign up for real language courses. (3) Marketing implications – The users are so immersed in cyberspace that if it is possible to use the product virtually they do not think about an actual purchase. Offering a product where customers are, (in the virtual world) not where the company is, is a change in the direction of thinking from traditional forms of commerce. Study limitation and future research - Future research should give more a holistic picture of integration 'earth' marketing and marketing within into virtual world.

## 6. Conclusion

The results of the survey conducted among Polish users of Second Life partly explained the proposed model of interactions presented in section 2.1. The first part of the survey identified the spectrum of possible interaction (indicated in the model in section 2.1. as passive, active without creation and active- creation), and investigated which interactions can be assessed as particularly interesting for avatars (variable 'perceived value of interactivity'). The result emphasizes the importance of 'bringing the brand to life'. Engaging activities such as debates, concerts or contests with a prize are users' preferred forms of interaction. At the same time, the survey showed that avatars also appreciate unusual and creative forms of passive interactions such as interesting graphics for product presentation or embedding sound in the land. Surprisingly when users were asked to assess the a product free trail, they assessed this interaction poorly. The data also highlights that companies could face huge difficulties in keeping avatar's responses during subsequent contacts at the same level as in the first. The study shows that there is no clear evidence that marketing interactivity can directly enhance the probability of buying real products, avatar's recommendations of brand to other users and perceived trustworthiness of the brand. The interpretation and discussion on the findings of the second part of this survey pinpoint many factors which should be taken into consideration when building a company's interactivity within the virtual world. These factors may influence the avatar's response to marketing interactivity determining whether the avatar takes part in the interaction or they may influence the outcome – that is – the avatar's willingness to recommend the brand, trust toward the brand or the avatar's willingness to renew contact with the company (as the proposed model in fig. 1). These factors (table 6) can be used as a list of dimensions for marketing interactions which should be considered and described before the company builds its presence in virtual 3D society.

| Factor/Factors | Description |
|---|---|
| Characteristics of interactivity | Interactivity congruence with the brand, interactivity duration and interactivity prominence. Active forms or passive forms of interactions |
| Characteristics of ties between avatar and brand | The characteristics of the ties between avatar and brand – their strength and emotional intensity. The avatar's response can depend on the familiarity of the brand. |
| Relationship between avatars | The perception of a company's interactivity changes when user-user relationship is building. The friend-avatar can influence the user to take part in interaction. The opinions leaders (virtual world influentials) can also play important role. |
| Avatar's motives | The user's response to interaction varies depending on the motives for existing within the virtual worlds e.g. 'relationship-orientated' avatars could be more willing to take part in social events as compared to 'educational-orientated' or 'building-orientated' avatars |

| | |
|---|---|
| Avatar's profile | Factors influencing an avatar's attitude to interaction and promoted brands connected with the avatar's profile: demographical, economical and behavioral variables (e.g. How many hours does an avatar spend within a virtual world? How do computer skills limit the ability to take part in the interactions?). It can be also important how strongly attached the user is to the virtual world – this means how willingly the user chooses virtual world activities as a substitute for real world activities. |
| Avatar's engagement in the process of co-creation | The virtual world allows users to create their own objects. If the company encourages users to be co-creators of interaction, this can influence the brand attitude and perception of interactivity |

Table 6. Factors which may influence the process of company-avatar interaction

## 7. References

Arakji, R. Y. & Lang, K. R. (2008), Avatar Business Value Analysis: A Method For The Evaluation Of Business Value Creation In Virtual Commerce, Journal of Electronic Commerce Research. Long Beach: 2008. Vol. 9, Iss. 3, p. 207-218

Barnes, S. & Mattsson, J. (2008), Brand Value In Virtual Worlds: An Axiological Approach, Journal of Electronic Commerce Research, Long Beach: 2008. Vol. 9, Iss. 3, p.195-206

Biever, C. (2007), Let's meet tomorrow in second life, New Scientist 6/30/2007, Vol. 194 Issue 1610, p. 26-27

Brown, J., Broderick, A. J. & Lee, N. (2007), Word of mouth communication within online communities: Conceptualizing the online social network, Journal of Interactive Marketing; Summer2007, Vol. 21 Issue 3, p2-20

Castronova, E. (2002), On Virtual Economies, CESifo Working Paper No. 752, http://ssrn.com/abstract_id=338500

Cowley, E. & Barron, Ch. (2008), When product placement goes wrong: The effects of Program Liking and Placement Prominence, Journal of Advertising, Spring 2008; 37, 1; ABI/INFORM Global, pg. 89

Davis A., Murphy J., Owens D., Khazanchi D. (2009), Zigurs I, Avatars, People, and Virtual Worlds: Foundations for Research in Metaverses, Journal of the Association for Information System, Volume 10, Issue 2, February 2009, pp. 90-117

DeSanctis G., Poole M. S. (1994), Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory, Organization Science, Vol. 5, No. 2, May 1994, pp. 121-147

Heinonen K. (2008), The Role of Digital Service Encounters on Customers' Perceptions of Companies', Journal of Electronic Commerce in Organizations, Volume 6, Issue 2, 2008 IGI Global

Joia, L.A.& de Oliveira L. C. B. (2008), Development and Testing of an E-commerce Web Site Evaluation Model, Journal of Electronic Commerce in Organizations, Volume 6, Issue 3, edited by Mehdi Khosrow-Pour, 2008, IGI Global

Kossecki, P., (2004), Building Trust in eCommerce - Quantitative Analysis, Available at SSRN: http://ssrn.com/abstract=633843

Park, J.& Stoel (2005), L., Effect of brand familiarity, experience and information on online apparel purchase, International Journal of Retail & Distribution Management. Bradford:2005. Vol. 33, Iss. 2/3, p. 148- 160

Reichheld, F. (2004), Najważniejszy jest wskaźnik wzrostu, Harvard Business Review Polska, May 2004, p. 43-53

Sohn D., Ci C. & Lee B-K (2007), The Moderating Effects of Expectation on the Patterns of the Interactivity-Attitude Relationship, Journal of Advertising, Fall 2007; 36,3; ABI/INFORM Global, p. 109

Stewart, Katherine (2003), Trust Transfer on the World Wide Web, Organization Science; Jan/Feb2003, Vol. 14 Issue 1, p 5-17,

Wagner, Ch. 2008, Learning Experience with Virtual Worlds, Journal of Information Systems Education 2008, vol. 19, No. 3, p. 263-266

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