Conduct of research:

The CVE/Metaverse platform, Second Life (SL), offers a good resource for this research, as it is the largest virtual world for the adult age group (Novak, 2009). It offers a collaborative, immersive, and open-ended experience where users can create content (e.g., virtual clothing, furniture items, and buildings), whilst SL maintain and update the hardware equipment, the advanced software provisions and the organisational tasks. There are a large number of virtual stores and retail activities within Second Life (Kaplan & Haenlein, 2009).

Reliability is a central issue within template analysis (King, 1998; 2011) and CIT studies focusing on the coders' abilities to consistently classify incidents into specified categories (Gremler, 2004). Code cross-checking was used throughout, where two researchers worked independently on the categorization. All discrepancies were identified and discussed through re-reading and re-sorting until agreement was reached. For ambiguous cases, a third judge was consulted to reach agreement on item classification. Additionally, reliability was strengthened through pre-testing the focus group questions, using the results to simplify questions.

Validity was established through two main criteria. First, we presented the template emerging from study 1 to six participants and discussed their reactions then incorporated them into the findings. Secondly, through combining two methods of data collection, a form of within-method triangulation (Denzin, 1970). By using two qualitative research methods, focus groups and the critical incident technique, we hoped to counterbalance "the flaws or the weaknesses of one method with the strengths of another" (Mitchell 1986, p.21). Comparison between the two data sets allowed for identification of similar patterns, thus increasing confidence in the findings, or to reveal unique discrepancies or dimensions that were potentially missed by a single method (Fielding and Fielding, 1986; Thurmond 2001). Thus, in study 1, focus groups participants

explored how virtual world's users conceptualise service quality. For study 2, the critical

incident technique (CIT) was used to collect further data from virtual world users. All

respondents were 'users' of a virtual store in CVEs[1], many recruited with the help of a market

research agency to ensure that the purposive sample reflected SL demographics.

Study 1: focus groups

The purpose was to build a general understanding about different experiences regarding

shopping in CVEs and provide data on how people conceptualise MR-SQ and derive the MR-SQ

dimensions in CVEs. This study followed the Wolfinbarger and Gilly (2003) procedure in

outline, where initial focus groups are recruited from amongst student and University staff users

of Second Life. Wolfinbarger and Gilly (2003) identify academic users as likely early adopters of

virtual shopping. Thereafter, focus groups of SL store users were recruited from an online panel,

broadening geographical and social inclusion to represent a wider range of viewpoints.

Despite some criticisms of the group dynamics and amount of content of online focus

groups (White 2000), the use and combination of the two contexts was thought advantageous, as

Turney and Pocknee (2005) conclude that in some circumstances they are a useful complement

with some distinct advantages over offline, in particular, the ability to reach populations who had

a particular stake in the technology and contributions from geographically dispersed respondents.

The insights uncovered within the online and offline focus groups were approximately similar as

most participants highlighted the same dimensions, though for online groups the physical

presence of avatars, especially their appearance, facilitated the discussion by forming a focus for

initial 'ice-breaking' conversations. Other researchers have also noted that the online

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[1] defined as a person who has visited, purchased from, or enjoyed the services offered by a virtual store at least once in the last 3 months.

environment can improve focus group data by facilitating more open and honest discussion through the anonymity and social equalization offered by medium (Reid and Reid 2005).

As participants met the conditions of having specialized knowledge and/or experiences, seven mini-focus groups (Krueger & Casey, 2000) (31 participants; 60-90 minutes) provided data. Three offline focus groups preceded 4 online groups conducted in Second Life, this sufficed to reach 'saturation' (Krueger & Casey, 2000). The online sample comprised 61% males, mixed nationalities and the age distribution tended to more youthful shoppers under 30 years of age. Participants gave consent after a briefing on the discussion purpose: as the focus groups were exploratory and intended as an aid in generating constructs, non-directive and semi-structured questions were developed based on existing literature. These covered what respondents liked best (and least) about recent purchase experiences, their service expectations and criteria for assessments of service, and their conceptualisation of 'good service' in MR-SQ.

Study 1: Template analysis

After transcription, analysis of the transcripts followed the template approach (Crabtree and Miller 1999; King (1998). The initial 'provisional' and 'open to modification' template was developed from a subset of the transcript data following successive readings of the text (King et al 2002, p. 334). Then, original themes were modified through a number of iterations guided but not confined by the initial template until a set of strong over-arching themes relating to how Second Life users conceptualise MR-SQ was identified, with four main dimensions: customer service, product dimension, store dimension, 3D platform dimension (see Table 2). Content analysis was not the aim of the data analysis at this early phase, thus, a single comment was considered as important as those that were repeated or agreed on by others within the group.

The method of analysis supports the grouping of direct user quotations under each theme; therefore, in reporting results, quotations with as little editing as possible are used as advised by King (1998) to give a sense of the original text and illustrate the links people made between attributes and quality and their interpretations to allow readers to understand better how individuals constructed their notions of quality in CVEs.

Customer service:

Participants identified several elements of customer service in Metaverse Retailing that have parallels in 2D e-retail service, including competence, courtesy, human contact, and responsiveness. However, the particular features of 3D virtual stores provide a distinct meaning for responsiveness in comparison to 2D, as the availability and type of interaction with sales persons or other avatars provides greater flexibility and convenience, as well the reassurance of a friendly, courteous greeting. *"... with a 2D website you have to email the person and then wait for reply where here in SL you can just have instant interaction, if you need to ask about the product, if you need to a demonstration or if there is something that is not quite right about it you can contact the person who created it and ask about it instantly."*

This level of responsiveness and naturalness in the interaction is not, however, without drawbacks. The presence of avatars that provide immediate responses can heighten expectation of that service in all stores and disappointment when it is not available, as one participant noted "*they never respond so I stopped shopping there*".

Nonetheless, respondents were understanding of the difficulty and expense of having live salespersons 24-7 due to the time differences between countries, with solutions suggested such as a 'call for queries' or 'push for help' button similar to real life stores.

Another difference is the identified need for emotional expressiveness as this adds to the sense of comfort and authenticity in communications. One respondent stated "*I would prefer an*

avatar with emotional expressions as I will feel it is more realistic and comfortable to deal with", whilst another gives a hint why the lack of expressiveness should have that effect by linking discomfort and being 'digital': *"a person (i.e., avatar) talking to me without any expression makes me feel uncomfortable and I feel that is very rigid and digital"*.

In e-SQ literature, emotional expressiveness is not often considered, yet for respondents in this study it affects purchasing behaviour, *"It will definitely have an effect on my decision and this is another advantage because you cannot receive this care in the 2D, the maximum you can get is a message saying thank you from shopping from our branch nothing else, but if you are in the3D and somebody is standing in front of you talking to you and smiling, this is something different."*. It may be technically difficult to add this dimension but from a customer perspective, it would bring the virtual encounter nearer to user needs for realism: *"I would hope for a max real interaction between me and others avatar"*.

Product dimension:

This theme included content, differentiation, demos, offers and incentives, fantasy products that are not available in real life, and customization. SL is a platform for creativity; this is reflected in the attraction of Product Differentiation, participants being attracted to Metaverse stores that provide fashionable products with-up to date styles; variety and new releases.

For content, participants preferred stores that provide full, detailed and up to date information about the product. In this aspect, Metaverse stores provide very good visual information but may lack textual detail, especially when instructions are needed for use in the virtual world; a participant explained how lack of information can lead to frustration *"the instructions were a bit vague...... it drove me mad"*.

However, a distinguishing feature of the SL context is that it allows for realistic Demonstrations (demos) and product evaluation that can attract customers *"I am definitely into*

the stores who have demos or the product in 3D." For example, a lighting store can show how complex lighting effects will look in different contexts, or the features of a digital product such as a pair of shoes with script attached for dance steps can be previewed before purchase.

The latter example also serves to illustrate another distinctive and appealing feature, that is, being able to possess unique products or unique experiences, some respondents felt that MR-SQ was reflected in whether stores offer avatar or product looks, features and elements that are not available in real life or affordable in real life:

"*the fantasy thing that you are not able to do in real life just looking and talking to [a] clock like here and other two people who are considered as fairies*".

"*I love that I can buy things here I could never hope to own in real life*".

However, just as in other contexts, a feature of MR-SQ is the opportunity for Product customization, particularly a proper fit, "*when I find a shop with stuff that fits I usually buy quite a lot there*", and occasional sales and special offers.

Store dimension:

The third theme, store dimension, consists of 4 sub-themes: store credibility, servicescape, ease of use, and store policy. Regarding store credibility, participants confirm the importance of an accurate and honest description of the product combined with store reputation to establish trust and perceptions of service quality. As expected from the discussion of platform characteristics, the Metaverse retail servicescape (product display, store layout and store design) is also an important dimension, "*the store has become a favourite location because of its design and atmosphere*".

Moreover, we could distinguish the aspects of design that lead to such evaluations, clarity of layout and design suggest quality *"some [stores] that are very chaotic like if you are walking through a maze then others with nicer quality store."*

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Table 2 Study 1: Preliminary MR-Service Quality Dimensions

I.   CUSTOMER SERVICE:
    1- COMPETENCE:
        a. Knowledgeable sales persons.
        b. Helpful sales persons.
    2- COURTESY:
        a. Friendly and Polite sales persons.
        b. Greeting sales persons.
    3- HUMAN CONTACT:
        a. Live sales persons.
        b. Sales persons available anytime.
    4- RESPONSIVENESS:
        a. Instant response.
        b. After sale service.
        c. Follow up service.
    5- EMOTIONAL EXPRESSIVENESS

II. PRODUCT DIMENSION:
    1- CONTENT:
        a. Full details and Information about the product.
        b. Up to date information.
    2- DIFFERENTIATION:
        a. Fashionable/ up to date styles.
        b. New releases.
        c. Variety.
    3- DEMOS.
    4- OFFERS & INCENTIVES.
    5- FANTASY PRODUCTS THAT ARE NOT AVAILABLE IN REAL LIFE.
    6- CUSTOMIZATION.

III. STORE DIMENSION:
    1- STORE CREDIBILITY:
        a. Accurate and honest product description.
        b. Store reputation.
    2- SERVICESCAPE:
        a. Product Display.
        b. Store layout.
        c. Store Design.
    3- EASE OF USE:
        a. Loading speed (No lag).
        b. Ease of navigation.
    4- STORE POLICY:
        a. Ease of Transaction.
        b. Product delivery.
        c. Transferable.
        d. Return policy.

IV. PLATFORM DIMENSION:
    1- EASE OF USE:
        a. User friendliness.
        b. Loading speed (No lag).
        c. Ease of navigation.
    2- SEARCH CAPABILITY/ENGINE.
    3- SECURITY & PRIVACY.
    4- ACCESSIBILITY.

Interestingly, here we start to observe limits on the wish for realism *"There are some difficult stores to navigate because they are based mainly like real shops. You can find it very difficult to navigate that is a big drawback in designing things."* As in 2D retail quality, Store policies, including ease of transaction/purchase, product delivery and return policy, was addressed by participants, albeit with added twists referring to digital goods, such as, 'transferability', that is, the ability to transfer digital goods once purchased to another avatar.

3D platform dimension:

Many of the features that virtual shoppers felt added to service quality, such as loading times, search engine attributes, security and privacy and accessibility, are not in the SL Metaverse retailer's control but provided by the Linden Labs (owners of SL). Nonetheless, respondents included these in their assessments of MR-SQ. The importance of ease of use was evident, as most participants believed user friendliness, loading speed and ease of navigation are extremely important factors that can improve the shopping experience. Respondents make unfavourable comparisons between search and price comparison in SL and 2D counterparts: they report that although shopping in SL is more enjoyable, they revert back to a 2D website selling SL digital goods (Xstreet) for more efficient search for SL items due to the poor 'in-world' search engines. *"With online Web shopping, I can use an aggregator like froogle.google.com to look up a specific product and compare prices [...]. I need to know the best deal - there isn't that for SL."*

Additionally, security and privacy were mentioned by a few participants as related to trust, security regulations and privacy enable them to trust communication and shopping as they do in the 2D environments. One participant stated "*I go and buy things online if I trust this site*". Another stressed the importance of privacy "*my email was publicized and I did not like it*".

Study 2: critical incident technique

CIT is a successful service quality research tool, both offline and online (Bitner, Nyquist, & Booms, 1985; Holloway & Beatty, 2003). Bitner et al. (1990) describe CIT as the "content analysis of stories or 'critical incidents' as data" (p.73) when the purpose of the research is to increase knowledge of a phenomenon about which relatively little has been documented.

In CIT, there is no pre-determination of what will be significant to the respondent; that is, the context is completely developed from the respondent's perspective (Chell, 1998), reflecting the normal way service customers think about incidents (Stauss, 1993). Moreover, CIT helps to identify factors potentially missed by other inquiry methods (Gremler, 2004) as respondents have the opportunity to give a detailed account of their own experiences. The method has received some criticism on issues of reliability and validity (Chell, 1998) and recall bias (Michel, 2001). However, Andersson and Nilsson (1964) found no problems in their investigation of reliability and validity aspects of the CIT method (including saturation and comprehensiveness, reliability of collecting procedures, categorization control).

There is no simple formula for determining the number of critical incidents required (Gremler, 2004). Hence, a purposive sample of 25 users of SL, with different levels of online purchase experience, recruited through a marketing research agency were asked to complete a self-administered Web instrument incorporating critical incident technique (CIT) features. Open-ended questions helped respondents write a full account including details on what was being purchased and why; what happened during the interaction with the virtual store; what aspects of the service received was of particular high (low) quality? These detailed answers are needed as, unlike personal interviews, the researcher cannot pursue follow-up questions. See table 3 for

sample characteristics, all respondents were familiar with using Second Life, which allows them to provide in-depth information.

Table 3: Study 2: Respondent Characteristics

Characteristic	Category	%	Characteristic	Category	%
Age	30 or below	52	Gender	Female	52
	31-50	40		Male	48
	51 +	8			
User's Rating	Beginner	4	No. of purchases	20 or below	8
	Average	24		21 - 50	0
	Expert	72		51 or more	92

Study 2: content analysis of critical incidents

The 'incident classification system', informed by the Bitner et al. (1990) advice on analysis and coding rules of CIT incidents, was used to interpret the responses by grouping the events recalled by respondents according to similarities. An incident is defined as '*an observable human activity complete enough in itself to permit inferences to be made about the person performing the act*' (Bitner et al., 1990, p. 73). Of the 70 critical incidents identified, 49 were classified as positive and 21 as negative. Incidents were sorted into different categories using the template from study 1 as a framework for data classification (Table 4 gives overall frequencies).

Synthesis of analysis: MR-SQ framework

CIT was used to validate the initial findings and make sure that no new dimensions were potentially ignored or missed. While synthesizing study 1 and 2 findings suggests that MR-SQ consists of four main dimensions, the subcategories reveal a number of differences. Four subcategories identified in study 1 were not mentioned in study 2: (see Table 2 versus Table 4) emotional expressiveness, fantasy products that are not available in real life, security/privacy, and accessibility. Due to the exploratory nature of this research, it was important not to eliminate

any subcategories at this early stage. Thus, we decided to keep the four subcategories and Study

1 and 2 results are combined in a conceptual model of the determinants of MR-SQ (Figure 1).

Table 4 Percentage analysis of the critical incidents obtained (overall frequencies)

MR-SQ Dimension	Positive incident		Negative incident		Total	
	N	%	N	%	N	%
I. Customer Service	**10**	**20**	**6**	**29**	**16**	**23**
1.Competence	2	4	3	14	5	7
2.Courtesy	2	4	1	5	3	4
3.Human contact	4	8	2	10	6	9
4.Responsiveness	2	4	0	0	2	3
5.Emotional expressiveness	0	0	0	0	0	0
II. Product Dimension	**23**	**47**	**8**	**37**	**31**	**44**
1.Content	3	6	1	5	4	6
2.Differentiation	11	22	4	19	15	21
3.Demos	4	8	2	10	6	9
4.Offers & incentives	4	8	0	0	4	6
5.Fancy products	0	0	0	0	0	0
6.Customization	1	2	1	5	2	3
III. Store Dimension	**15**	**31**	**5**	**24**	**20**	**29**
1.Store credibility	0	0	1	5	1	1
2.Servicescape	11	22	1	5	12	17
3.Ease of use	2	4	2	10	4	6
4.Store policy	2	4	1	5	3	4
IV. 3D Platform Dimension	**1**	**2**	**2**	**10**	**3**	**4**
1.Ease of use	1	2	0	0	1	1
2.Search engine	0	0	2	10	2	3
3.Security/privacy	0	0	0	0	0	0
4.Accessibility	0	0	0	0	0	0

Discussion:

This research advocates that the distinctive features of CVE 3D environments make it essential

to explore the applicability of existing e-SQ models. The results confirm that the distinctive

active avatar, participatory based approach provides a unique experience wherein users can co-

create their service experience whilst fulfilling needs for self-expression, identity, and social

interaction with others (Papagiannidis and Bourlakis, 2010). The nature of their purchases was

varied, though all were digital, including clothing and shoes (with discussion of digital add-ons),

furniture for virtual homes and fantasy products, for example, as space ship.

However, for applicability of existing models, the results show mixed results, although it

is clear that service expectations are active and that comparisons are made to customer wants and

needs *"[A] cluttered shop is the last thing you want to see here, people lose patience and they

will leave because they cannot get what they want,"* as well as the 2D environment *"so it is

different from shopping in 2D in which you will make the buying decisions by yourself without

meeting anyone."*

Figure 1 A conceptual model of the determinants of CVE-service quality

One of the main contributions of this study is the model of MR-SQ (see figure 1), that

provides a clear representation of consumer dimensions of MR-SQ in CVEs. Noticeably, these

dimensions combine many of the same measures of offline and online retail service quality found in the literature; the fundamentals seem to remain the same. However, there are distinctive experience and motivation features stemming from the inherently social nature and graphical attributes of the 3D platform. Furthermore, table 5 below shows the new MR-SQ dimensions, overlapping dimensions with different meanings to MR-SQ compares to e-SQ, and similar dimensions in both MR-SQ and e-SQ.

Responsiveness in the CVE context has a different emphasis to that in previous literature. Parasuraman et al. (2005) takes the view that the aspects of the E-RecS-QUAL dealing with handling service problems and inquiries are salient only to customers who had non-routine encounters with the websites. In contrast, in CVE environments, being responsive involves a sincere interest in responding adaptively to customer needs throughout the entire visit, which impacts service perceptions: "*A sales assistant showed me around the whole store and then showed me the men's shoes I enjoyed the guided tour of the store and thought I received really good service that was fun*". Responsiveness in CVEs is not only related to solving problems but it encompasses a general sense of customer attentiveness, which encompasses providing demonstrations of goods. "*The merchant had set it up so the majority of functions were still working and this meant I could get a full feel of the product. Having this ability … is a great facility.*" The challenge is that the expectations of the nature of responsiveness are much higher due to the anticipation of offline –like service generated by the presence of avatars.

As predicted, the co-presence perceptions afforded by avatars also plays a role in facilitating and enhancing interaction. Respondents expressed their wish for the most natural or realistic way of interaction with the website, and avatars present that opportunity. This is limited by the lack of ability to display emotional expressiveness, a new dimension connected to the

distinctive features of virtual worlds. Notwithstanding, as consumers often have a need for social interaction (Swaminathan, Lepkowska-White, & Rao, 1999), CVEs present an opportunity to enhance their shopping experience. The co-presence of other avatars when combined with responsive service can coalesce into a production of experience that is not matched in 2D retailing: "*I was purchasing a ball gown; there was a lot of banter and joking between the salespeople, store-owner and customers. The owner ended up selling the gown for half price …Very pleasant experience with lots of interaction from the salespeople there.*"

Consistent with prior research on customers in other contexts (Collier and Bienstock 2006; Bauer et al. 2006), CVE users believe that displaying full details and information about the product is a key dimension affecting their shopping experience. This requires virtual store owners to put more emphasis on the way they present each product. Another feature of CVEs that can enhance MR-SQ is the availability of fantasy goods, services and experiences. These provide ample opportunity to support customer needs for novelty and variety as a means of delivering enjoyment, differentiation and personalization, identified by Madu and Madu 2002) Bauer et al (2006) and Wolfinbarger and Gilly (2003) as important service quality dimensions. These dimensions add something creative to the user product experience that is not available in real life and 2D websites. *"advertised itself as the largest spaceship in SL …I stepped into the store and found myself in a large clean structure with a distinctly futuristic build which fit into the theme of the products it sold. The store had a large Rezzing area where the ships they sold could be rezzed and looked at."*

Consistent with previous e-SQ research (see table 1), within CVEs the emphasis on servicescape, ease of use, aspects of store credibility and appropriate store policies are still vital. However, an opportunity for retailers is that the atmospherics that play a critical role in

consumers' experiences in real life can be realized in the 3D context. Second Life can provide its

users with a place in which these experiences can be set up and lived, bridging the gap between

the real space and the electronic space (Papagiannidis, 2008). Good store layout and product

presentation allow users to clearly judge the product and affects their opinion of MR-SQ.

Table 5: MR-SQ dimensions in relation to e-SQ

New dimensions emerged due to the unique features of CVES	
• **Human contact** • **Emotional expressiveness**	These two dimensions confirm that defining MR-SQ must consider the presence of avatars and that the affective communication that take place between avatars significantly affects SQ evaluation.
• **Demos** • **Fancy products that are not available in real life**	The virtual trial and consumption enrich the experience and motivates customers to engage more with services on CVEs. Moreover, many users are motivated by fantasy products. Possessing products they could never hope to own or wear in real life make CVEs more entertaining.
• **3D Platform dimension:** – **Search engine** – **Accessibility** – **Ease of use, Macro level**	The responsibility of providing the users with an enjoyable and user friendly experience doesn't only fall back on the virtual retailers but also on the virtual worlds providers.
Previously identified dimensions in the 2D context but with a difference	
• **Responsiveness** • **Offers & incentives**	Users look forward to these two dimensions during their entire shopping experience, not only when there is a problem.
• **Servicescape**	Attractive designs to improve the loading speed and the ease of navigation.
• **3D Platform dimension:** – **Security/privacy**	This dimension was extensively mentioned in e-SQ literature. In CVEs, it falls on VWs providers.
Common dimensions within the 2D and 3D context s	
• **Courtesy & competence**	Wolfinbarger and Gilly (2003): Customer service Yang and Fang (2004): Courtesy & competence
• **Differentiation & customization**	Madu and Madu (2002): Differentiation & customization
• **Content**	Yang and Fang (2004): Content Collier and Bienstock (2006): Information accuracy
• **Store policy**	Wolfinbarger and Gilly (2003): Fulfillment/reliability
• **Store credibility**	Yang and Jun (2004): Credibility
• **Ease of use/ Micro level**	Parasurman et al. (2005): Efficiency, system availability Bauer et al. (2006): Functionality

However, there is a danger in assuming virtual stores' architecture need be an exact replica of real life, *"There are some difficult stores to navigate because they are based mainly like real shop [...]that is a big drawback in designing things." (Focus groups).* Mathwick, Malhotra & Rigdon (2002) suggest that retailers can "enhance the reactive sources of value by tailoring their channels to specific shopper tasks". Where the 3D platform can improve experiences, CVE stores should be designed to leverage the characteristics of the platform to facilitate navigation and experience.

The '3D platform dimension' is not in the control of store owners. Linden Lab as the creator of Second Life) are responsible for ensuring good search engines, security and privacy, and accessibility; people or organisations using SL must use what is provided by Linden Lab. Ease of use was highly rated by respondents, a finding noted by other researchers (Parasuraman et al. 2005; Loiacono et al. 2007) in the 2D context. Although previous e-service related studies emphasized the importance of accessibility, security and privacy (see table 1), this was mentioned less often in this study. A possible reason is that third parties only operate, improve and protect the Service. As technological advances become available, the present difficulties with 3D platforms will become less important.

To sum, much purchasing in CVEs is of digital goods, fulfilment is immediate and these goods are also mostly 'consumed' in the 3D space. Hence, even though the high level attributes of e-SQ and MR-SQ may be similar in concept, there is a shift in CVEs towards the expression of online retailing service through social experience and the flexibility, co-production and creative opportunities this presents. Respondents mark these aspects out as important, supportive, advantageous and distinctive:

"I could simply try the clothes and ask next avatar, how do I look? This sort of things and communication you can never get in 2D sites but in the 3D we can share our experiences."

Implications for retail practice: the virtual experience: a road map for success

Customer perceived e-SQ is one of the critical determinants of the success of online business (Yang & Jun 2004). An understanding of the factors that can enrich the MR-SQ experience is provided by the strategy/ checklists for customer service (Table 6), displayed products (Table 7) and store dimension (Table 8) as shown in the appendix. They can be used by new entrants or by existing retailers as tools to judge their performance and improve the user's shopping experience.

This research supports findings that the more consideration is given to designing Web sites for user engagement, sensation, and reaction, the more likely users are to have enjoyable experiences (Lin, Gregor & Ewing, 2008). Notwithstanding this emphasis on the servicescape, it is still vital to provide ease of use, aspects of store credibility and appropriate store policies developed to match customers' needs. Products should be fully refundable within at least 24 hours of purchase. Retailers should always be willing to make exchanges when there is a valid reason if necessary to satisfy the customer.

Limitations and future research

Whilst all research methods come with their own limitations, the use of different qualitative research methods enabled us to counteract some of these shortcomings and hence develop richer and more detailed conclusions about MR-SQ. Although exploratory, the results of these studies provide valuable insights and help organisations to understand customer behaviour in other virtual contexts. Nonetheless, data were collected only from users of Second Life, restricting the generalization.

Opportunities for further research are promising in the following areas. First, the four dimensions proposed in this research provide a preliminary framework for developing an instrument to measure service quality in the 3D context. An extension of this research would be to compare service quality in the offline, 2D and 3D contexts. Moreover, Wagner (2008) argued that virtual worlds are now at a similar development point to the Internet two decades ago. Such a transition from a 2D to a 3D retail environment is not an easy one and brings a diverse set of challenges before any potential benefits (Papagiannidis, 2008). Investigating this transition can assist in helping retailers decide if the transition is appropriate to their position and products.

Conclusion

The findings of this study suggest that MR-SQ in CVEs consists of four main dimensions: customer service, product dimension, store dimension, and 3D platform dimension. The current study provides a framework that academics and practitioners can use in evaluating MR-SQ. Noticeably, the identified dimensions combined some of the same measures of offline and online retail service quality found in the literature. At the same time, the CVE context presents opportunities for retailers in enhancing social experience, responsive service and creative co-production opportunities, perhaps exploiting customer desires for novelty, consumption aspirations and managing identity. It is within these gaps that respondents identified in 2D retailing that current CVEs and the future Web 3.0 hold appealing prospects for enhancing and producing creative and co-operative online retailing service quality.

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Appendix:

Table 6 Checklist related to customer service

Competence:	
Knowledgeable /Helpful	1. Salespersons should be competent: they should possess the necessary skills to answer questions and solve problems
Courtesy:	
Friendly	2. Friendly and Polite staff should be available to deal with customers
	3. Salespersons should be consistently courteous with customers
	4. Salespersons should be approachable and easy to contact
Greeting salespersons	5. Salespersons should be available to greet and welcome customers.
Human Contact:	
Live sales persons	6. Stores should offer the ability to speak to a live person if there is a problem.
Responsiveness:	
Instant response	7. Stores should be willing and ready to respond to customer needs.
	8. Stores should answer inquiries promptly.
	9. Stores should never be too busy to respond to customer requests
After sale service.	10. Stores should show a sincere interest in solving arising problems.
Follow up service.	11. Stores should send a follow up email after the purchase for evaluation.
Emotional expressiveness:	
	12. Facial expressions should be conveyed when communicating with salespersons
	13. Salespersons should be emotionally expressive.
	14. Salespersons should greet people with a smile

Table 7 Checklist related to the product

Content:	
Product Information	1. Information about the product should be available to customers. 2. Stores should provide clear and detailed information about the products. 3. Stores should provide accurate information about the product.
Up to date information.	4. Product information should be regularly updated.
Differentiation:	
Fashionable.	5. Stores should provide creative and original products.
New releases.	6. Stores should update their stock regularly.
Variety.	7. Stores should provide wide product variety.
Demos:	
	8. Stores should provide the possibility to test the product before buying it.
Offers & incentives:	
	9. Stores should provide offers and free samples.
Fancy products:	
	10. Stores should provide fancy products that are not available in real life.
Customization:	
	11. Stores should provide the ability to customize the product to properly fit my avatar.

Table 8 Checklist related to the store

Store reliability/ fulfilment:	
Product delivery	1. The product should be delivered when promised.
	2. Stores should deliver the order quickly.
Store credibility :	
Accurate/honest product description	3. Stores should provide accurate product description.
	4. Stores should be truthful about its offerings
	5. The creator's background and profile should be accessible.
Serviescape:	
Product Display	6. The product should be clearly displayed.
	7. Stores shouldn't have fine print that is difficult to read.
	8. Prices should be clearly displayed with the items.
	9. The user should be able to clearly see the store graphics.
Store Layout	10. Stores should be well-organized.
Store Design	11. Stores should be visually appealing.
	12. Stores should be attractive
	13. Stores design should be creative/ innovative.
Store Policy:	
Ease of Transaction.	14. Stores should provide quick and easy instructions to complete a transaction.
Return policy	15. Stores should allow for refunds and replacements.
	16. Stores should provide the user with convenient options for returning items.
	17. Stores should handle product returns well.
Transfer the product	18. The purchased product should be transferred to friends.
Ease of use:	
User friendliness.	19. It should be easy for newbies to use the store.
Loading speed	20. Stores should become visible and load its content fast.
	21. Stores shouldn't have too many graphics that take time to load
Ease of navigation	22. It is easy to walk around the store.