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A Design Functionality Study of IDM Web-Stores.

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Abstract

One of the advantages of conducting business over the Internet is the ability to collect information about customer preferences in order to serve them accordingly. Personalisation provides a means of doing this. In this paper, we have attempted to study the effect of personalisation on the success of IDM web-stores. The major contribution of our paper is the extension of the IDM Platform Functionality Model of Srinivasan et al [24] to include personalisation. The second contribution is the investigation of six personalisation features that specify and describe this functionality in its various forms. We have used both quantitative and qualitative research techniques such as click-stream analysis and emphatic design in a focus group. Our findings suggest that personalisation is a significant component of IDM web-store design.

Introduction

What exactly is Interactive Digital Media (IDM)? According to the Media Development Authority of Singapore (cf. www.idm.sg/faqs), IDM refers to “digitised media that are highly interactive in the way it engages with users. It is related to the use of new media, multimedia and interactive services.” Examples of digital media include music, voice, graphics, animation, videos, and film. When these media types are combined in such a manner as to produce a new type of content that is highly interactive to the users who consume or access it, an IDM application materialises.

The IDM market is indeed a far cry from the scene of devastation during the dot.com crash in the late 1990s. Rapid advance of technology has resulted in cheaper and more abundant bandwidth, digital storage, processing power and content creation. This, combined with widespread adoption of digital distribution standards and formats like mp3, MPEG4, H.264, as well as new ways for organizing production like the Open Source movement, wikis, and the concept of prosumer behaviour, has resulted in a proliferation of IDM platforms and web-stores. These platforms range from behemoths like Amazon who have been in the market through the dot-bomb era, to relatively young upstarts like YouTube and iTunes. And among the many YouTube and Flickr wannabes and clones, e-tailing platforms, rich media platforms are many hybrid players, each offering

similar services and/or products. Getting closer to the consumer and maintaining mindshare becomes a key tactic for success.

Personalisation has emerged as one major differentiating factor between different product and service offerings [[27], [21]]. Many definitions for personalisation have been offered by different researchers, each emphasizing slightly differing, overlapping aspects. Wu, et al [27], define it as a modification of all aspects of a website (or platform) which is displayed to the user to match his/her particular needs and context. Rossi et al. [21], describe different scenarios of personalisation, such as link personalisation, content personalisation. Karat and his colleagues at IBM [14] give a list of possible personalisation features, such as adaptive navigation, universal personal profile, and recommendations based on profile data.

Using a hybrid of qualitative and quantitative techniques, this paper attempts to study the impact of personalisation on the success of IDM web-stores. In particular, the paper will focus on:

- Further extending the IDM Platform Functionality Model prepared by Srinivasan, et al [24] to describe personalisation functionality.
- Studying the relationship between the popularity of IDM platforms among users, against the presence and usability of personalisation features.
- Discovering the personalisation functions that have the greatest impact on user experience.

The empirical study covers forty online web-stores and e-tailers offering books, music, videos, and online games. These web-stores were chosen based on their ranks and ratings in popular review websites. Thirty-six volunteers from a graduate class participated in our exercise which included individual evaluation of these web-stores, followed by focus group discussions on the personalisation features found on these web-stores.

The major contribution of our paper is the extension of the IDM Platform Functionality Model [24] to include personalisation as a function. The secondary contribution is the establishing of six personalisation features that organize and describe personalisation in its various forms. It is hoped that the extended framework and the six

personalisation features will be helpful to e-tailers who are interested in analysing and improving their web-stores.

Background Review

One of the advantages of conducting business over the Internet is the ability to collect information about customer preferences in order to tailor the user experience accordingly [17]. Such information may be used to serve the customer by understanding needs. And personalisation provides the way of tailoring a website for each user and is said to be the factor differentiating web and business in the real world [10]. In fact Gartner lists personalisation as one of the seven steps to improve customer experience. Agnieszka & Sven [1] have identified personalisation as one of the key factors related to digital product market, other factors being quality, uniqueness, relevance and branding.

The concept of Personalisation is found to be very broad and has been defined differently by various researchers, each one highlighting slightly differing and overlapping aspects. Wu et al. [27] suggest that personalisation implies modification of various aspects of a website (or platform) displayed to the user so as to match his or her particular needs and context. For Jackson [10], personalisation is a process and also a technology. As a process, it continuously adjusts content to targeted individuals. As a technology it can push content to user, or pull - user can look for content. Most of the literature puts it as a process which uses customer information to tailor products or services that best match customers' preferences. Hence this can be considered as a value added service provided to the customer by the service channel – the web-store [17].

Personalisation is considered to be a critical aspect in e-commerce websites [21]. It is widely prevalent on the web and its strategic use contributes much to e-business, by providing an innovative way to gain an edge in the marketplace [16]. A study by Wu et al, [27] suggests that different websites show different degree of personalisation. E-Commerce websites are one of the categories having highest degree of personalisation. The effects are an increased likelihood of customers making repeat visits to the web-stores, and more transactions made due to the fact that customers are able to find what they want quickly. This is particularly relevant in the current market situation where market forces are driving businesses to maximise the value of every user interaction by providing differentiated services. Josef & Alfred [11], state that one-to-one marketing, based on the concept of knowing, remembering and serving the customer as an individual, is the basic principle of personalisation in an e-commerce environment. This is of paramount importance in today's highly

complex, competitive market.

Personalisation benefits both customer and website owner [4]. At a higher level, the objectives of personalisation include arousing user's interest in the website, and promote user interaction and hence building a relationship with the user and the website [22]. In the context of e-commerce websites, many researchers claim that increased revenue is the main purpose [15]. Personalisation increases web traffic. It can also aid in acquiring new customers, retain existing customers and ensures returning customers, thus bringing in increased revenue, better margins and creates trust, loyalty and hence improved customer satisfaction and customer intimacy [10, 15]. Maurice et al [16] point out some aspects of a website affects its utility in delivering the intended service to its customers, such as website content, individual page layout and structure of the entire website.

Personalisation strategies enable price discrimination, product differentiation and enhance first mover advantage by tailoring products to individual customers and utilising information provided by customer's interaction with the user interface. Hence it can affect profits by increasing sales, through cross selling, or through promoting accidental discovery of diverse products via recommendation process. In addition, personalisation can lower costs by serving as an efficient channel for communication to customers, thus saving advertising costs [10, 17]. As Kar Yan & Shuk Ying [12, 13] suggest, Web personalisation serves three main objectives: draws customer's attention, conveys messages, attempts to persuade customers and thus affect purchase decisions. Their study shows that web personalisation can influence and increase purchases.

From the customer perspective, by presenting content relevant to the individual customers' needs and interests, personalisation reduces the necessary navigation behaviour, reduces information overload, and increases customer satisfaction, while facilitating sales (Hoelscher & Dietrich, 2004). Also Personalisation can benefit customers if it allows them to accomplish their goals on an e-Commerce site more quickly and easily or with fewer errors [3]. So ultimately the website should give the customer, a feeling of being designed just for him/her [10]. Also Personalisation reduces search costs and adds value by providing suggestions to aid the customer decision process [17].

Personalisation techniques infer customer needs and expectations by identifying and tracking their behaviour, and deliver on their expectations to them in a personalised format [25]. The customer needs can be identified via explicit information, e.g. profile information given during sign up, and implicit information obtained by analysing usage patterns, click stream analysis using web logs, data

mining techniques and so on [22], [2], [25], [6]. Personalisation can be user driven, i.e. users are allowed to opt and personalise, or system driven. Here, the system will adapt as per users preferences inferred from usage data. Research has shown that user adaptive websites are more effective than adaptable websites [8]. Some popular personalisation techniques are collaborative filtering, Web usage mining [[23], [22], [25], [19]], decision rule based filtering, content based filtering [25].

Various facets of the website can be personalised, ranging from page layout as per preferences to highly customised adaptive navigation. Hence Personalisation can vary based on what has been personalised. Rossi, et al [21], describe different scenarios of Personalisation, such as link personalisation, content personalisation, structure personalisation, and remote personalisation. Dimitrios et al [5] distinguish between four types of personalisation functions: i) Memorisation - User salutation, bookmarking, personalised access rights; ii) Guidance - recommendations, tutoring; iii) Customisation - personalised layout, content, hyperlinks, pricing scheme, product differentiation; and iv) Task Support - personalised errands, query completion, negotiations. In the IDM context specifically, Agnieszka & Sven [1] point out two possibilities of personalisation, content personalisation and website personalisation features that attempt to treat a visitor as an individual.

Risch et al [20] present a complete picture of areas of personalisation during an end-to-end transaction by providing classification of personalisation functions according to their order of appearance along a buying process. Karat et al [14] give a list of possible personalisation features, for example, personal book, universal personal profile, subscription-based services, service and support, recommendations, adaptive presentation, customization, adaptive navigation, live chat-based user support, personalised feedback, transaction history, loyalty programs, incentives, future purchase considerations, personal store, greetings, and context-specific menus.

We may hence conclude at this juncture that personalisation is a diverse concept, which comprises of presentation of various facets of a website to suit the user's needs as identified from explicit data or implicit behaviour, with the ultimate aim of making the website customer-centric, and preventing cognitive overload, which may eventually increase revenues. However, all the above discussion converges at one point - providing customers what they want when they want it. In other words providing a better customer service and quality experience with the website [[15], [10]].

Based on the above notions, we derived a set of

personalisation features, to contribute to the new dimension – personalisation. This extended framework is explained in detail in the next section.

Conceptual Framework

Srinivasan and his co-workers [24] first introduced what they called an IDM E-Tailer Platform Functionality Model which described three groups of functionalities that are pertinent to the success of IDM e-tailing platforms – *transaction functions*, *marketing functions*, and *revenue functions*. Transaction functions are those features that allow users to click through the sales and business process; marketing functions refer to those features that promote the web-store and its products; revenue functions are those features that allow web-stores to monetize business opportunities.

We have extended the model of Srinivasan et al [24] by introducing a fourth functionality group – ***personalisation***. Personalisation functions refer to those features of the web-store that customizes its content, functionality, and/or presentation to the context, needs and/or preferences of the users. This is shown in Figure 1.

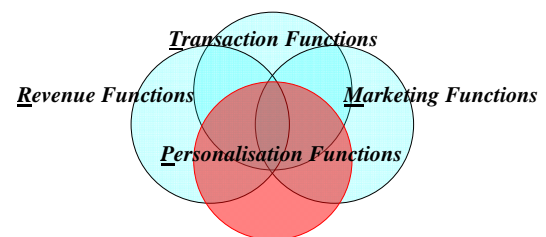


Figure 1: Extended IDM e-tailer Platform Functionality Model.

Based on our review of some key research - c.f. [21], [14], [9] - concerning personalisation features and functionalities in the context of interactive user applications, we further derive 6 personalisation feature groups. All personalisation functionalities may be classified under one or more of these feature groups. They are: ***personalised content***, ***personalised search***, ***personalised navigation support***, ***personalised tasks support***, ***personalised help***, and ***personalised presentation***.

Personalised Content

Personalised content features refer to those web-store features that customize or match the website's content to the user's context, needs, and/or preferences. Rossi and his colleagues describe content personalisation as manifesting in two ways – node structure personalisation, and node content personalisation [21]. In node structure personalisation, the website filters and rearranges its content structure so as to show only those that is of interest to the user. In node content personalisation however, different users will see

different content or information based on their particular history of activity on the website. For example when a user from Japan visits a video web-store he/she may be shown Japanese language videos and movies by default.

Personalisation of content may be based on:

- what similar users liked

This is referred to as collaborative filtering [22]. The website attempts to make recommendations to a user based on the preferences of a large number of similar users.

- user profile & user's past behaviour

This is referred to as content-based filtering [22]. In this case, the website attempts to personalise content for each individual user based on the user profile as well as user activity history on the website, e.g.: links and topics visited, topics searched.

- user's explicitly stated preferences

This is referred to as decision rule-based filtering [22]. Some questions are posed to the user and based on his/her answers; the website tries to personalise the content based on pre-determined decision rules.

Personalised Search

This refers to search as a user task that is customized according to the user's specific needs, preferences and context. Haiyan [9] describes Instrumental Personalisation as personalisation that tries to make its users more efficient and productive while using the system. This is done by "designing, enabling and utilizing useful, user-friendly tools" that are based on "situated needs of the user."

For web-stores selling interactive digital content, one of the most important tools that a user may find useful would be the content search. If personalised search is presented in such a web-store, it may display past search keywords done by the user, or related search keywords used by other users. Personalised search also includes search filters (e.g.: by language, by country/region, by genre) that a user may choose to apply to his/her search results.

Personalised Navigation Support

Navigation is also a user task that can be personalised to make it more efficient and enjoyable for a user to navigate a web-store. Karat and his colleagues at IBM refer to this as Adaptive Navigation [14]. Rossi et al [21] call this Link Personalisation. Haiyan's [9] description of Instrumental Personalisation would also include navigation support personalisation as a means to improve the efficiency and productivity of users.

Examples of personalised navigation support include the navigation-focused contextualized help that appears in a popup when a user does a mouse-over on a topic or link. Based on a user's browsing history on the web-store, the web-store

may also suggest or recommend certain topics, subject, genre, or section of the website that may be relevant to what the user is looking for.

Personalised Task Support

This type of personalisation focuses on task support that is more general than search or navigation. Risch et al [20] talks about personal shopping lists and checkout support, as personalisation functionality or features that "ease or support human-computer interaction". The paper describes extensive task support features for the web-store buying process, as well as complementary activities like reporting, user account management, and so on, as personalisation functions.

Examples of this type of personalisation include a step-by-step wizard that guides a user through the entire process of purchasing a membership account, contextualized help pop-ups on mouse-over, task shortcuts aimed at making experienced users more productive and efficient, step-by-step wizards aimed at helping inexperienced users along, and user activity history (e.g.: user's past purchases).

Personalised Messaging

This refers to the personalised messages that a web-store uses. The aim is to engage the user in a conversation rather than just providing information and content. Karat et al. [14] describe this as "feedback that the system recognizes a repeat visitor".

Apart from merely a personalised greeting that acknowledges a user's identity, this type of personalisation can also include personalised messages, advice or alerts pertaining to the user's context or history of activity. For example, a user logs in to the Crunchy Roll video sharing website and is greeted by a message that acknowledges that it's been a long time since the last time he logged in. The message may also advise the user concerning general aspects of his activity or interaction on the web-store.

Personalised Presentation

Personalised presentation customizes the display of the website content to the user's needs and preferences. This form of personalisation may be based on explicit user settings on background colour, font size, webpage theme, as well as the user profile information, in particular the preferred language and the location of the user. Karat [14] describes this as "Personal preferences in page layout or format". This type of personalisation is also commonly known as customization, emphasizing the explicit user settings concerning the display of the webpages.

Examples of this type of personalization include the ability to select and apply pre-defined combinations of webpage backgrounds, font-sizes,

font-styles, and colour schemes. These combinations are commonly known as web-site themes. For users who require special accessibility features, such features allow them to select the font-sizes, font-styles, colours, as well as other presentation options that are appropriate for their needs.

Together, these 6 features describe the personalisation functionalities that extend the IDM E-Tailer Platform Functionality Model. The extended model now includes Transaction functions, Marketing functions, Revenue functions, and Personalisation functions. The next section describes the research methodology used in this study.

Research Methodology

Since the purpose of this research is to examine how personalisation affects the success of IDM web-stores, we have chosen to analyse e-tailers which sell digital content such as music, books, MMORPG games and video. A total of 45 websites were selected. This includes the 30 websites from the previous work done by Srinivasan et al [24], which consisted of 10 music websites, 10 book websites and 10 MMORPG games websites. In addition to these, we have chosen 10 video e-tailer websites and 5 video sharing websites to further extend the study to yet another category of IDM e-tailer websites – video web-stores.

The video web-stores were chosen from Alexa for the reason that Alexa provides ranking of sites and details of their popularity. We have chosen a reasonably good mix of websites from the top, medium, and low ranks. The video sharing websites we selected were the most popular ones.

For the 30 IDM web-stores from Srinivasan's [24] study, their T (Transaction functions), M (Marketing functions) and R (Revenue functions) scores, were combined with P (Personalisation functions) scores obtained via user evaluations in this study. For the video websites (the 10 video e-tailer websites and 5 video sharing websites), the research team did the scoring for Transaction, Marketing and Revenue functionalities (TMR Score), using a similar assessment scheme.

Since the main focus of our research is on personalisation, we have used an idea from software engineering known as *emphatic design* using user study techniques in order to collect quantitative and qualitative data for our study. A focus group was conducted with 36 participants, with the aim of eliciting quantitative and qualitative data, by evaluating the personalisation features and functionality of the websites. We also used a questionnaire to collect quantitative data. A moderated brainstorming session was conducted, with the aim of eliciting qualitative data.

For analysis purposes and comparison with the study ratings (Personalisation scores), we used data

from review websites, given in Table-1 (cf. Annex). These provide ratings based either on web traffic, popularity or quality. We infer that web traffic, popularity and quality can be considered indications of the success of the web-stores.

Table 1: Sources for web-store selection.

Since the web-store ratings and rankings obtained from different review websites are on different scales and represented in different ways, we combined all of them into a single 1-10 composite index, 10 being the highest (or best) and 1 being the lowest (or worst).

Conducting the focus group, 45 websites were divided into 9 sets of 5 websites each. The 36 participants selected for the focus group were divided into 9 groups of 4 persons each. We developed a questionnaire focusing on the personalisation features and functionality of IDM web-stores.

We designed the questionnaire with 3 sections. The first section concerns the personal profile of each participant. The second section concerns the participants' background with respect to their usage of and experience with IDM websites. The third section relates to the participant's experience with the personalisation features on the web-store he or she evaluated. The questions in the third section were scored on a 5 point Likert scale of Strongly Agree, Agree, Neutral, Strongly Disagree and Disagree. Before conducting the focus group sessions, the research team created user accounts for participants to login to the sample web-stores. We noted that some of the web-stores require a credit card number to be provided in order to register a user account. For such websites, we allowed the participants to work through them without logging in. Depending on the specific web-stores being evaluated, we requested that the participants perform specific tasks such as searching for a particular item, adding a product to the shopping cart, adding a product to the wish list, checking out a purchase, and so on. These tasks would help them to evaluate the personalisation features of the web-stores.

The focus groups were conducted in 3 sessions. Each focus group session lasted one hour. Each session had 12 participants, organized into 3 groups of 4 persons each. A facilitator from the research team was in charge of each group. In a session, each participant evaluated 5 websites of a particular category (i.e.: books, music, videos, or games). All participants in the same group evaluated the same set of web-stores. The evaluation consisted of an individual evaluation followed by a group discussion.

Individual evaluations lasted 40 minutes. Each participant spent 5 minutes to work through each web-store, followed by 3 minutes to complete a

questionnaire for that web-store. This was repeated for each of the 5 web-stores. The group evaluation was conducted in the last 10 minutes. Here, a member of the research team facilitated a group discussion on each of the 5 evaluated web-stores. The discussion focused on the available personalisation features of the web-stores and how useful the participants felt they were. Notes were taken by the facilitator. Finally, each participant was rewarded with \$10 for their time.

Data from the focus group questionnaires were collated to produce a single personalisation score for each of the 45 web-stores in the sample. This personalisation score reflects how much the web-store users liked the personalisation features. It also indicated how well the personalisation functionality was designed and implemented on each web-store. The data collected consists of quantitative and qualitative data. The quantitative data consists of the TMRP score and data obtained via the focus group questionnaire. The qualitative data was obtained from the focus group discussions. In the following section, we analyse these results and discuss our findings.

Results and Discussion

For books, music and MMORPG web-stores, the same sample websites used by Srinivasan et al [24] to derive their IDM Platform functionality model were used in this study. The original paper specified that the selection of websites was done based on reviews and ratings available online on the Internet. The input data for analysis consisted of: i) answers to the personalisation-related questions in each questionnaire; and ii) participants' response during the focus group discussions. The answers to the personalisation-related questions in each questionnaire were scored using a Likert Scale as shown below.

Table 2: Likert scale and assigned scores.

Response	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

Based on the scores for these questions, an average personalisation score was derived for each questionnaire. Taking the average for all the questionnaires evaluating a particular web-store, a final personalisation score was calculated for that particular web-store. This personalisation score is the basis for subsequent comparisons and analysis. This personalisation score is also combined with

the Transaction, Marketing, and Revenue scores to form a composite TMRP score for each web-store. It was found that the ranking data obtained from Alexa.com and Ranking.com was spread over a very wide range for the selected test web-stores in the study. This made it difficult to compare the ranking data against the TMRP score and the personalisation score for each web-store. To overcome this difficulty, the ranking data for each web-store was converted to a banded ranking index that ranged from 2-10. This is shown in Table 3 below.

Table 3: Band ranking index.

Web-store Rank	Band Ranking Index
0-99	10
100-999	8
1000-9,999	6
10000-99,999	4
100000-999,999	2

Based on the ranking and rating data obtained from the review websites Alexa.com, Ranking.com, XomReviews.com, NetTop20.com, and TopTenReviews.com, a composite index that combines all these rankings and ratings was calculated for each category of web-stores (i.e.: books, music, videos, and games). In cases where a website does not have a particular review score, we took the score as N.A., and excluded that score while computing the composite index. We analysed the different web-store categories separately so as to study the effect of personalisation on each category.

Book web-stores

The earlier described band ranking index scheme for the Alexa.com and Ranking.com rankings was applied here. The Google rank score for (from XomReviews.com) for Amazon.com and BooksAMillion.com are not available. Hence, these scores are not taken in to account when deriving the composite index for these 2 web-stores. The personalisation score and associated composite index for each web-store is shown in Figure 3 below.

Our findings suggest that Amazon has the highest personalisation score and composite index. For Walmart.com, BarnesandNoble.com, AbeBooks.com, and Powells.com the composite ratings are found to be well below their personalisation scores. We observed that during our focus group, the Walmart.com website was down, and hence was evaluated by one participant only. On the other end of the graph, BookCloseouts.com has the lowest personalisation score and composite index. The values for both personalisation core and composite index are same at 4.3.

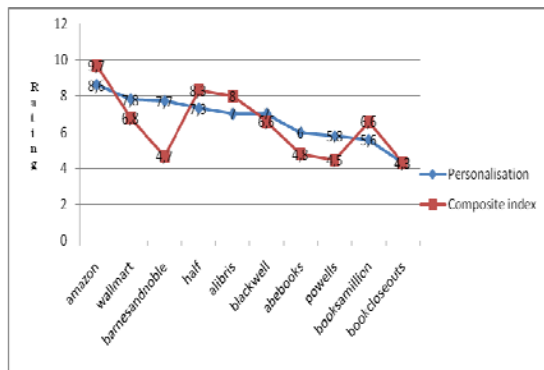


Figure 3: Personalisation vs. composite index for book web-stores

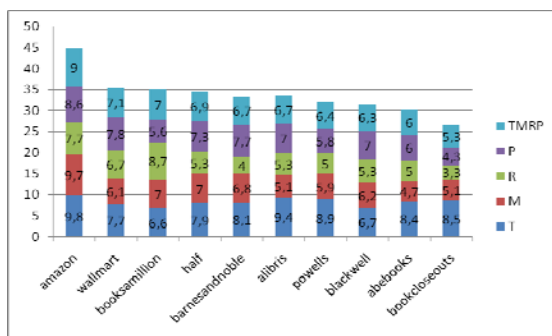


Figure 4: TMRP comparison for book web-stores

Figure 4 shows the Transaction, Marketing, Revenue, Personalisation functionality scores for each book web-store. This shows that Amazon.com has the highest overall score, with the highest personalisation score as well, suggesting that high level of personalisation features also contributed to its success as an e-tailer. At the other end, is book-closeouts, with the lowest overall score and personalisation score.

Music web-stores

The computed personalisation score and associated composite index for each music web-store is shown in Figure 5 below.

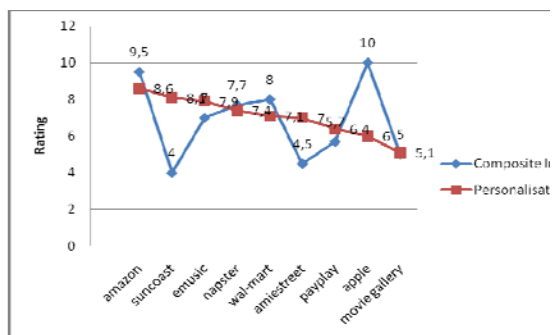


Figure 5: Personalisation score vs. composite index for music web-stores

Our findings suggest that, Amazon is on the top with an overall score of 9.5; most evaluators were impressed with the personalisation features available on Amazon which resulted in a top score for the music category. On the other end, MovieGallery.com has the lowest composite index of 5.14, and a low personalisation score of only 5.1. The average ranked websites like Napster.com and Walmart.com had average personalisation score. We noted that Apple.com had a low personalisation score, but a higher composite index. This may be due to the reason that the evaluation was conducted only for iTunes page whereas the composite index obtained from online ratings, was based on whole website. Suncoast.com was found to have a lower composite index, but a high personalisation score. We noted that it offered good recommendation features and effective search system that makes it easy for the user to navigate the web-store.

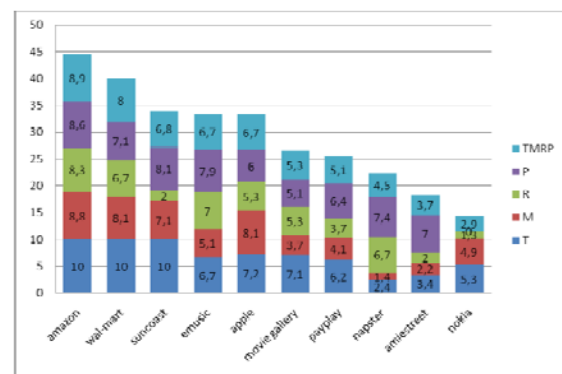


Figure 6: TMRP Comparison for music web-stores

Figure 6 above shows the Transaction, Marketing, Revenue, Personalisation scores, and the average (TMRP) for each music e-tailer website. It is clear that Amazon tops the chart again with the highest TMRP score of 8.98 and a high personalisation score of 8.82. At the other end, AmiStreet.com had the lowest TMRP and a consistently low personalisation score. As Nokia.com requires downloading of additional software, that website was excluded from evaluation.

Video web-stores

The same band ranking index scheme for the Alexa.com and Ranking.com rankings was again applied. The personalisation score and associated composite index for each web-store is shown in Figure 7 below.

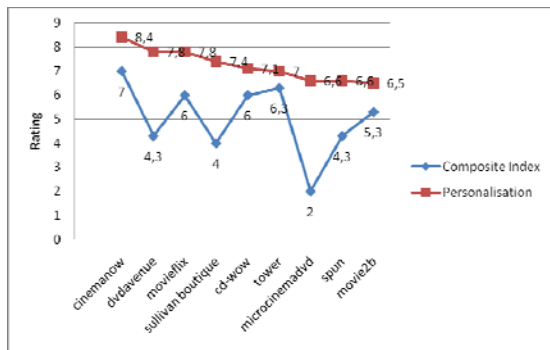


Figure 7: Personalisation vs. composite index for video web-stores

From our findings, CinemaNow.com is on the top with the highest personalisation score of 8.4 and highest composite index of 7. Movie2b.com had the lowest composite index and personalisation score. MicroCinemaDVD.com had a poor personalisation score. We noted that this web-store provided poor recommendations, and its navigation was inadequate.

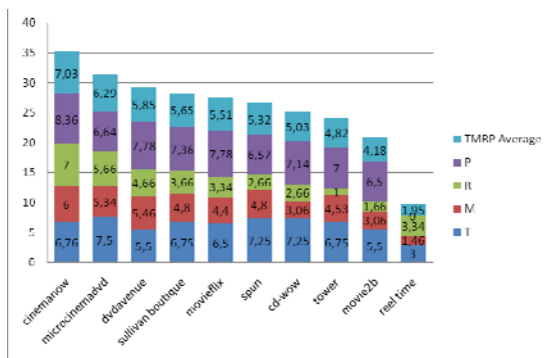


Figure 8: TMRP Comparison for video web-stores

Figure 8 above shows the Transaction, Marketing, Revenue, Personalisation scores for each video e-tailer website. Our findings suggest that Cinema.com which had the highest TMRP score also had the highest personalisation score. On the other end, movie2b.com stands second last with a TMRP score of 4.2, and the lowest personalisation score of 6.5. Reel.com was not available for evaluation, as the website was down; hence the personalisation score is not available.

Online Game Websites

The band ranking index scheme for the Alexa.com and Ranking.com rankings was applied. The computed personalisation score and associated composite index for each web-store is shown in Figure 9 below.

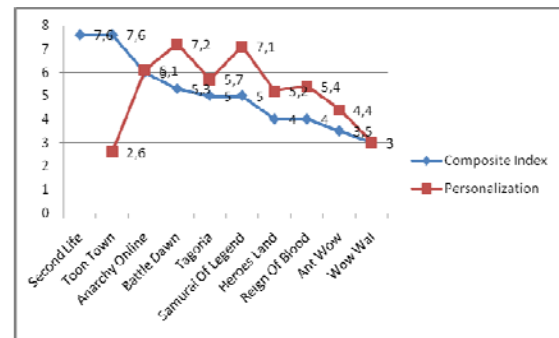


Figure 9: Personalisation vs. composite index for online games websites

From our quantitative evaluation, most of the game websites were relatively similar in terms of their score. The only 3 standouts were Samurai Of Legend, Battle Dawn, and Toon Town. Samurai Of Legend and Battle Dawn both have higher personalisation scores than average, while Toon Town has a much lower score than average.

Samurai Of Legend is a Massively Multiplayer Online Role Playing Game (MMORPG). It currently has 500,000 registered players. Its personalisation features include relatively detailed self-describing functionality for users to create their own profile, a tutorial mode that displays context-sensitive help and hints, personalised greetings and messages, as well as a small collection of display templates for users to choose from. Users are also able to turn tutorial mode ON or OFF.

Battle Dawn is a Massively Multiplayer Online Real-Time Strategy game (MMORTS). Perhaps due to its relatively sophisticated game play mechanics, Battle Dawn features extensive tutorials, context-sensitive help and hints, as well as beginner guides and walk-throughs. These help features are activated by default for all users unless disabled explicitly in the user preferences setting. Experienced users are also able to define shortcuts for some of the more tedious or complicated in-game tasks they perform frequently.

Toon Town has the lowest score of all the gaming websites. This could possibly be because unless users download and install the game client software, the website itself offers very little else for visitors. During our user evaluation, Second Life could not be evaluated because it required the download and installation of the client software.

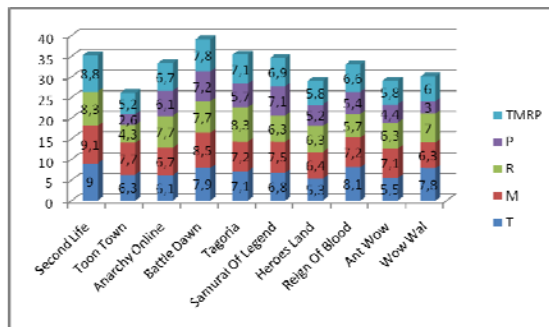


Figure 10 – TMRP comparison for games e-tailers

Figure 10 shows the Transaction, Marketing, Revenue, Personalisation functionality scores for each online gaming website. Overall, Battle Dawn has the highest TMRP score, as well as personalisation score. This suggests that the high level of personalisation may have contributed to its success. At the other end, Toon Town, has the lowest overall score and personalisation score.

Qualitative Analysis

After the participants had evaluated the test web-stores, a discussion was conducted. The objective was to find out how they felt about each website, and specific personalisation features they liked, disliked or expected in the website. Their views were also sought concerning how the website can be improved. As facilitators for the focus group discussion, we asked specific questions and sought general views about personalisation in IDM websites. We asked the questions in general or specific to certain websites in a manner we deemed appropriate to the progression of the discussion. The result of the discussions is summarised in Table 4 (cf. Annex).

Table 4: Participants' views concerning personalisation features

In general, participants were not satisfied with the personalization features in the reviewed websites. For books, music and video e-tailing websites, the main features they were most interested in were those that could provide help in navigating and searching the websites, as well as content recommendations.

For gaming websites, users strongly requested for more context-sensitive help and guide. Generally they found gaming websites to be geared towards experienced users. They felt bewildered as new visitors on gaming websites.

Concluding Remarks

Our findings suggest that personalisation is a significant functionality in IDM web-stores. This is shown in the focus group discussions where users shared about their difficulty in navigating,

searching and making sense of the websites without personalized support features.

Participants' feedback suggest that for book, music and video web-stores, product recommendation is an expected (i.e.: hygiene) feature that users would take for granted that any web-store they visit would provide. The quality of recommendation however is considered to be generally unsatisfactory. An improvement in this feature would likely boost the usability and attractiveness of the web-store to customers.

Participants' feedback also suggest that personalised navigation support, personalised search are important (i.e.: hygiene) features that users find useful and expected to be found. Other personalised features that remember users' preferences and enable them to more easily find the content or products they want, would be added bonuses.

Despite these findings, it should not be forgotten that for web-stores to be even remotely attractive to IDM customers and consumers, the selection of content and offering should be wide and deep enough to cater to their needs. If this were absent, not even the most personalised web-store experience would be able to attract visitors and consumers to the web-stores in the long run.

For online game websites however, it was found that personalised content that caters to new users, helping them ease into the gaming experience, were the most sought after. Specific features like context-sensitive help, new user guides and walk-throughs were singled out in the participants' responses as the personalisation features that would have the greatest positive impact on their user experience. These were generally absent in most of the test game websites used in this study.

These personalisation features for online game websites should ideally be combined with riveting and addictive game play mechanics to better serve consumers and to improve buy-in from them.

We have hence introduced the extended IDM Platform E-Tailing Functionality Model that includes the personalisation functionality in the functional analysis of IDM e-tailing websites. We hope that this extended model, together with our proposed 6 personalization features, will offer a framework for IDM e-tailers to analyse and improve their web stores.

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ANNEX OF TABLES

Table 1:

Name of score	Website	URL	Ranking based on	Category applicable
Alexa rank	Alexa	http://www.alex.com	Traffic	Books, Music , Video , MMORPG
Google rank	Xomreviews	www.xomreviews.com	Relevance of the website as per user community	Books, Music , Video , MMORPG
Top20 book websites rank	Top20 book websites	www.books.nettop20.com	Popularity	Books
Ranking.com rank	Ranking	www.ranking.com	Popularity	Books, Music , Video , MMORPG
Top Ten Reviews rank	Top Ten Reviews	www.toptenreviews.com	Quality	Video

Table 4:

No	Personalisation Features	Books	Video	Music	Games
1	Recommendations	Users expect this feature but prefer better results.	Users find this feature very useful.	Users find this feature very useful.	-
2	Navigation Support	Users would like better navigation support that helps them browse the site to find products they want.	Same as for books.	Same as for books.	-
3	Personalised Search	Users requested for more search options, and want the search results to be more personalized to their preferences.	Same as for books.	Same as for books.	-
4	Context sensitive Help	-	-	-	Users requested for this as a major requirement that they do not see in most gaming websites.