Towards a Conceptual Framework for Design and Functionality of Websites and Smart Device Apps for Startups in Lebanon: Impact on Customer Journey

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Abstract

The purpose of this research is to examine the importance of aesthetic design and the design functionality of ecommerce websites and m-commerce applications among digital start-ups. Based on in-depth literature review, and using the theory of "form and function" (Townsend et al., 2012) and Cebi's hierarchy of design characteristics (2013) as a theoretical framework, the authors explored the various design and functionality aspects that may affect performance and hence allow e-commerce companies to better recognize what needs improvement. In light of this analysis, a model was developed depicting the relationship between aesthetics and functionality of website/mobile app design on one hand, and the customer journey on the other. The model suggests that aesthetics act like a façade, that either initiate or annihilate the customer journey, and in the case of passable aesthetics, functionality becomes the key player of the journey. The model can be used as a step towards an empirical study that provides analysis of users' perceptions of websites and mobile apps to identify the factors that would most likely influence the expectations and impressions of both the aesthetic and functional designs. The implications of the study are discussed, and the limitations and recommendations for future research are presented.

Keywords

Design; Aesthetics; Functionality; Customer Journey; Startups

1. Introduction

The Lebanese economy has been suffering since the civil war of 1975 due to governmental mismanagement and corruption. With increasing inflation rates while the minimum wage remains 675,000 LBP per month, or approx. 30,000 LBP per workday, the Lebanese people are struggling to make ends meet. Many continue to emigrate where opportunities rise, however, for those who remain, finding a job is nearly impossible. The unemployment rate in Lebanon is at 25%, with unemployment among those under 25 is at 37% (Annahar, 2019). Hence, many of those who remain in Lebanon are turning to local Incubator/Accelerator programs to raise support for their early stage start-up ideas, of which many are digital-first with high-risk yet relatively low capital requirements. Examples of incubators are the "Spark Your Way" with LAU Fouad Makhzoumi Innovation Center, or the "The Talal and Madiha Zein AUB Innovation Park" (AUB i-park), as well as other accelerators such as Speed@BDD; a collaborative effort between Lebanon's leading venture capital funds and entrepreneurship support organizations (Bader, Berytech, IM Capital, Lebanon for Entrepreneurs, and Middle East Venture Partners). In order to increase chances of being selected among the country's and sometimes the region's top start-up ideas, entrepreneurs must present strong and thorough business proposals. Besides the market feasibility and the projected financial returns, these proposals should cover a coherent implementation approach which often outlines the design of the proposed digital platform, including aesthetics and functionality. Presenting a clear design is a critical opportunity to visually reflect the vision of an early stage startup,

contributing to higher chances of fundraising from various sources e.g. angel investors, VCs, incubator programs, or even bank loans.

High performing start-ups have many success factors that should be assessed. While the core service /product is a key factor, the main area of focus of this paper will be the aesthetics and functional design of the digital platforms displaying products in the e-commerce sector.

1.1 Problem Statement

With unemployment rates hitting record highs, many university students are embracing the proverb "necessity is the mother of invention" and are attempting to become entrepreneurs. The growing presence of local innovation and incubation centers, including top universities and banks, have encouraged many to take a leap of faith and apply. However, with a crashing economy, competition among rising entrepreneurs is higher than ever before and requires a well-rounded holistic business proposal and simulation, whereby all aspects of the business are carefully crafted. For e-commerce businesses specifically, the design of the platform is a critical metric for building success with these incubators. It is essential to understand how the current digital businesses have been able to overcome all the struggles that arise from operating in Lebanon. Some of the issues that are particularly challenging for digital businesses include Lebanon's weak internet infrastructure, very high telco costs, and unreliable electricity. The lack of a proper postal system is an added challenge and phone calls need to be made to clarify the location of delivery addresses. Local retailers and food stores often use WhatsApp to contact customers, and when that fails, they have to bear the added cost of direct line phone calls. Furthermore, many stores rely on third-party delivery companies in Lebanon, some of which are not reliable to consistently deliver damage-free goods. Imports and exports face heavy taxes and corruption at the ports, leading to additional unexpected costs for e-commerce companies. With this in mind, which elements of e-commerce website designs can help Lebanese companies better compete regionally/globally, survive an arid business environment through an economic downfall, and contribute to the creation of local jobs and growth opportunities?

1.2 Statement of Purpose

The purpose of this research is to shed light on this question through examining the importance of aesthetic design, functionality of the design of e-commerce websites, as well as m-commerce applications. E-Retail sales accounted for 14.1% of world-wide retail sales in 2019 (Statista, 2019). As forecasts predict this figure to reach 22% in four years, most brick and mortar retailers are rushing to develop online presence to remain relevant in an industry which is heavily going through digital transformation to meet consumer demands and expectations. It is crucial to consider the right design of digital platforms and how they build on and extend physical in-store brand experience and customer service.

As for the existing e-commerce-based companies, brand identity and vision are visually experienced online, with websites acting as a "headquarter show-room". Understanding how various aspects of design are affecting performance measures can allow e-commerce companies to better recognize what needs improving. Arguably, for investors and incubators, a business proposal without a website or a mobile application could be one that has a huge weakness and is blind-sided. However, the lack of digital platforms in existing brick and mortar businesses can also indicate opportunities that investors could greatly profit from.

As for e-commerce start-ups, websites and mobile applications are their main showrooms and in order to attract investors, a well-designed, easy to navigate, and consumer-centric platform is essential to the core business model. It is the first friction point with potential customers and the leading factor in influencing first impressions. In the event where viewers are impressed or satisfied, they will continue their shopping journey and if all goes well, they might convert from browsers to buyers. On the other hand, sub-par aesthetics might reflect untrustworthiness and directly contribute to losing potential customers/sales. This leads to unnecessary churn, favoring competitors who have aesthetics that better align with e-commerce end-user expectations.

1.3 Research Questions

This study intends to address the following question: What role can the aesthetic and functional design of websites and mobile applications play to enhance the performance of e-commerce startups? More specifically:

- 1. What aspects of a website's aesthetic design impact digital business start-ups' initial shopper impressions?
- 2. What aspects of website functionality impact digital business start-ups' shoppers' impressions?
- 3. How is the UX (user experience design)/ UI (user interface design) design of mobile applications related to the success of the mobile application?

This research is of significance to stakeholders in new or existing e-commerce companies as it provides critical understanding of how to judge a website or a mobile application's effectiveness when representing and communicating the company's brand and values to consumers.

2. Literature Review

2.1 Elements of a well-designed Website

"Web performance and design are currently the largest obstacles to online purchases" (PR Newswire, 2000). A website, as defined by Lee and Koubek, is "a group of interface and functional attributes that are connected to each other to serve high levels of usability, performance, and beauty to users, to satisfy users' wants, and to obtain their satisfaction in a competitive market of online and offline sales and information-services" (2010). Tarafdar and Zhang classified websites into five categories: Portals and search engines, Retail, Entertainment, News and information, and Financial services (2005).

In this study, the focus will be on the retail category as it is the most needed and most likely sector to survive this ruthless economic downfall. The description of the retail category according to Taraafdar and Zhang is "websites whose primary purpose is selling to customers, using B2C model" (2005). In their study, they conduct a factor analysis which led to the development of the following six factors to help break down website elements: Information Content, Ease of navigation, Usability, Customization, Download speed, and Security. Their study suggests that the most important characteristic for retail websites is security. This finding was also supported by Ragnathan and Ganapathy who found that users of retail websites valued websites security more than information content and privacy (2002).

Consequently, it is essential that organizations provide their users with credible and trustworthy websites in order to encourage users to become customers through online purchases. Since websites and mobile applications are predominantly visual environments, a well-designed visual space is essential to gain trust in this virtual dimension. In Karvonen's study, website design aesthetics or visual aesthetics were found to be important for gaining trust from customers (2000). However, this is true and effective so long as the visual elements interact and aide in producing the final messages that are intended to be delivered to customers (Zettl, 1999). Zettl added that misuse of design aesthetics can result in an ineffective communication and become a disadvantage (1999). Furthermore, Tractinsky and Lavie stated that design aesthetics and website design elements should come together to produce a unified "aesthetic experience" (2003). Hence, design should be catered to the needs of the customer, help serve them, convey the designated messages, and add value to the entire experience, all the while avoiding distracting them from their tasks. A website's properties should be developed with the user's requirements, or as Lee and Koubek state "user's preferences", which they describe to be "the choice of alternatives". According to their study, the user is "the most important for a company's higher profits" (Lee, Koubek, 2010). As such, they state that the "Criteria for user's preference-making include usability, performance, aesthetics, price, information quality, brand" and "they assign different weights to these factors when making their preferences" (Lee and Koubek, 2010). They point out that the most important of these is usability, which is defined as "the extent to which a product can be used by specified users to achieve specified goals with the effectiveness, efficiency, and satisfaction in a specified context of use" (ISO, as cited by Lee and Koubek, 2010). Lee and Koubek's findings (2010) suggest that among all the design attributes assessed for commerce websites (content organization, visual organization, navigation system, color, and typography), organizational structure and layout were more crucial and significant than color and typography.

Hence, many studies point towards organization as the primary need for a retail website. It provides the user with a clear structure and intuitive browsing experience, consequently increasing the likelihood of completing the task of purchasing.

Eroglu, Machleit, and Davis developed a different systematic classification, with high task-relevant environments and cues, and low task-relevant environments and cues (2001).

High task-relevant elements are those which are vital to the completion of the user's task, which includes merchandise descriptions, images, and availability, price, terms of sale, delivery, and return policies, and navigation aids. Low task-relevant cues might include verbal content unrelated to the shopping goals, colors, borders, background patterns, typestyles and fonts, animation, music and sounds, entertainment white space, icons, image maps, and decorative images, among other elements (Eroglu, Machleit, and Davis, 2001).

In a world where the competition among e-commerce businesses as well as m-commerce businesses is increasing, the competitive advantage for these platforms comes from a synergetic and well-designed combination of both functionality and aesthetics, such that the user is not only engaged, but also are guided towards the task of purchasing.

2.1.1 Aesthetics of website design

Averill, Stanat, and More (1998) and Hirschman, (1983) have all emphasized that the experience of aesthetics has intrinsic value and is enjoyed for its own sake. Many put into question what the relationship is between design aesthetics and design functionality (or utility), and how the balance between them varies under different circumstances, and how the combination is used to serve different purposes.

Design aesthetic in m-commerce is defined as the balance, emotional appeal, or aesthetic of a website and it may be expressed through the elements of colors, shapes language, music or animation (Cyr, Head, & Ivanov, 2006). In fact, Schultz determined that when comparing a simple page layout to a more aesthetic design (with a decorative font, colors, graphical elements, and a header), the latter positively affected the user's impression of the site (Schultz as cited by Cyr et al. 2006). Cyr, Head and Ivanov expected that the perceived visual aesthetics of the mobile interface would impact user perceptions of usefulness and ease of use of the device (2006). The following diagram depicts the authors' model for design aesthetics and m-loyalty. This is depicted in figure 1. Their study found that "design aesthetics do in fact have a significant impact on perceived usefulness, ease of use, and enjoyment" (2006). Their analysis confirmed that design aesthetics may have a larger relative impact on enjoyment than on usefulness, and still impacts ease of use, but to a lesser degree (Cyr et al. 2006).

According to Eroglu, Machleit, and Davis, the low task-relevant cues might not directly affect the completion of a task as they are "unrelated to shopping goals", however they do create an atmosphere that has the potential to make shopping more pleasurable (2001). In the event where the online store is an addition to a brick and mortar store, the low task-relevant cues are the ones that create links between the online experience and the in-store experience.

Aesthetic design serves to attract and satisfy customers and act as a point of differentiation between brands (Veryzer, as cited by Landwehr, Wentzel, & Herrmann, 2012). According to a research done by Chitturi, Raghunathan, & Mahajan when a product exceeds hedonic expectations it evokes delight (2008). They add that "consumers attach greater importance to a product's hedonic dimension, by only after a certain level of functionality is met" (2007). In instances where functionality was suboptimal, the perceived excellence in a hedonic attribute such as styling was able to compensate to a certain degree (Chitturi, Raghunathan, & Mahajan, 2008). They propose that "failing to meet hedonic expectations evokes dissatisfaction, but failing to meet utilitarian expectations evokes anger" (Hagdtvet, Patrick, 2014; Chitturi, Raghunathan, & Mahajan, 2008).

According to Norman (2004), "there is a general expectation that better designed products should function better". Although Norman is referring to product design, this is generally applied to overall design, which is to meet the expectations of experienced customers and consumers alike. In other words, both aesthetic design and functional design should complement each other in such a way as to satisfy and exceed all the expectations of customers. Moreover, according to Cebi (2013), a website's design characteristics may be sorted into the following criteria: "usability, visual aspects, technical adequacy, security, communication, and prestige." Table 1 presents the sub-design parameters, as well as their explanations, of each criterion of Cebi's hierarchy of design characteristics.

2.1.2 Website Design Functionality

Website functionality is the combined effectiveness of the designed system in guiding, informing, and efficiently and effectively leading the user throughout their shopping journey towards the completion of their task. Tarafdar and Zhang's factor analysis to determine the performance of a website includes five factors, two of which are: the "Ease of navigation" factor and the "Usability" factor (2005). The former enhances the navigability of the website, as well as the consistency of links, while the latter covers the organization and layout of the website, its attractiveness, and the extent to which it uses multimedia.

Bai, Law, and Wen's conceptual model of a website quality was divided into two major constructs: functionality and usability. Their "model posits that functionality and usability influence their outcomes only through the key mediating variable of customer satisfaction" (2008). In their study, "functionality" refers to contents of a website and includes purchase information, service products information, destination information, quality of information, and contact information. "Usability" refers to the issues of design, specifically, "the degrees of ease with which users can use a website", and it includes language, layout and graphics, information architecture, user interface, and navigation. Figure 2 below depicts their conceptual model with the respective instrument measures.

Eroglu, Machleit, and Davis developed the concept of "a high task-relevant environment" which they define as "all the site descriptors that appear on the screen, which facilitate and enable the consumer's shopping goal attainment" (2001). This includes navigation aids such as the guide bar and site map, as well as merchandise descriptions and prices, terms of sale, delivery, and return policies (2001). They state that a picture of the merchandise is also a high task-relevant cue, hence in their study, the nature of the elements does not dictate whether they belong in either the high task or the low task environment, rather their purpose does. Furthermore, Cox and Dale (2002) divided the web site key quality factors into four categories: ease of use, customer confidence, on-line resources, and relationship services. The "ease of use" category incorporates all that which relates to website design, including links, consistency, menu, screens, clicks, flexibility, search, forms, text, color, graphics, and animation (2002).

Delving deeper in the literature, one finds studies that views design in another lens. For example, Ulrich and Eppinger who cited Townsend, Montoya, and Calantone in 2012, mentioned that design can be divided into two components: form and function. Form refers to the visual aesthetics of the customer interface characteristics, while function refers to the perceived performance of certain product characteristics. (Townsend et al. as cited by Botzenhardt et al. 2012).

2.2 Mobile Application UX/ UI designs

According to Perea and Giner (2017), "The User Experience (UX) of a product or service is defined by how we perceive the summary of our interactions with it. A positive UX is the result of a careful design that is centered on the user needs." In order to adapt a user-centered design over a technology-centered design, the users' needs must be identified, they must be mapped with possible solutions, and then the solutions must be built. Perea and Giner state that a well-designed product responds to user needs at different levels.

The first level are needs from our human condition whereby "understanding how our senses work can help us design solutions that better fit our natural behavior as humans" (2017). An example of this is understanding how human's peripheral vision allows for identification of movement, which leads to the design of notifications that appear by moving-in at the top of mobile devices' screens, as opposed to fading-in, ensuring that they are more easily noticed.

The second level are needs from general expectations such as avoiding breaking the "principle of least astonishment", meaning preventing user confusion by making the product behave as they expect it to. It also includes the principle of minimizing the "cognitive load" on the user, meaning require from them the least mental effort, as well as reduce the "points of friction" where the user has to stop and think. Perea and Giner (2017) refer to Donald Norman's principle of "affordances" which he described as "the elements that communicate the possible actions of an object." Affordances that are applied incorrectly develop confusion about the possible actions, failing to meet the general expectations of users. Another way of meeting general expectations is through the use of metaphors as they can help users connect the dots between a known concept and an old one. An example of this is the use of the shopping cart icon to signal the place where your selected products are. Generally, "design guidelines" capture important conventions to consider when designing a specific platform, organization, or family of products. They may guide designers toward reusing concepts that are familiar to users.

The third level includes needs from specific context of use. This includes the "must-haves" which are the basic needs the product must support. The "linear needs" are those that add more value to the application as they are better supported. An example of these is how the speed of finding a route will influence the experience of using a navigation application. The "latent needs" are those that go unrecognized by users initially. When those needs are satisfied, the user greatly appreciates the added feature. It is essential to understand that most mobile users are not experts in technology and their limited experience results in a need for very intuitive mobile application designs.

When a final product is being launched, it is better that it fulfills the "Minimum Viable Product" (MVP) standard whereby the product is complete, even if it encompasses a small scope, rather than be incomplete whilst covering a wider scope (Perea & Giner, 2017).

Since many mobile devices offer various options to support users, understanding the differences is essential. From small to larger screened mobiles, the experiences provided by the application's interface must be one and the same for all devices. As such, varying approaches are used depending on the content displayed. In order for the application to function smoothly and maintain its look on various screens, there are a few approaches that could be used to create a best fit combination. Responsive behavior, fluid pages, adaptive behavior, flexible behavior, and hybrid solutions are all possibilities that designers and developers need to consider when designing the way objects are displayed on diverse screens.

Designing the interface is a major contributor to creating the ultimate user experience. It incorporates the application's navigation, referring to the location, number of elements, and their behavior, as well as navigation menus, which are the most heavily used elements of an application. The latter come in many types including sliding drawer, upper area menu, bottom menu, and no menu. Furthermore, certain applications may include floating buttons which may be appreciated by many for their proximity to the thumb area especially when the main navigation menu is placed at the top of the screen. In fact, Hoober (2013) found that 49% of people use their smart phones with one hand, leaving designers with insightful data about their consumers' behavior which allows them to map the area around the thumb as that which is most used. As with many standard mobile conventions, the navigation should include the back button, usually placed on the top left, which allows the user to return to the previous screen.

Furthermore, notifications can be a very effective tool to engage users as well as to guide them to any new activity they should see; however, they need to be limited to relevant minimal content in order to avoid becoming a nuisance to the user. Since humans notice movement in their peripheral vision, designers have turned to moving and flashing notifications to grab their attention. Before users have the chance to experience the navigation of an application, they are usually welcome by a registration form. Many companies have realized that flexible and simplified registration processes tend to prevent the loss of conversions.

Another major convention includes updating the results by stretching the screen down, which is followed by a spinner of sorts to provide the user with a follow-up visual. A suitable search system should be provided as well, such that the moment a user taps on the magnifying glass or the search box, intelligent suggestions are provided with the aim of minimizing the user's input. In order to gather data about user preferences, applications should include either a heart or a thumbs-up icon supporting the content being displayed for "one-tap" action. This input allows the application to provide the user with personalized results over time. Comments as well as ratings allow for users to interact on the platform itself, increasing their average usage time. Finally, the share button is essential as it allows users to circulate data from the application among their network and in so doing, extending the reach of the application to prospect users, that will help achieve higher conversion rates.

As for the aesthetic design of the application, Perea and Giner (2017) mention that "design is not about making things look nice", that "design is a process of finding solutions", and that they recognize that "aesthetics definitely contribute to the user experience", as well as that it is just one component and it won't help fix the usability issues in a product. Ahmad and Ismail (2017) cite Table 2 from Chan, et al. which describes the recommended design guidelines specifically for m-commerce. In addition, according to Lee & Benbasat (2003), seven design elements of customer interface are to be examined in m-commerce design in order to improve the quality of the application and attract more customers. These are listed in Table 3.

Finally, basing their eight new guidelines for mobile interface design on Shneiderman's "Golden Rules of Interface Design", Gong and Tarasewich (2004) proposed "use shortcuts, offer informative feedback, design dialogs to yield closure and support internal locus of control" (Ahmad & Ibrahim, 2017). They also add "consistency, reversal of actions, error prevention and simple error handling and reduce short-term memory load." (Ahmad & Ibrahim, 2017)

2.3 E-commerce websites and Mobile applications' performance measures

In order for an e-commerce company to assess how they are performing and whether or not their strategy is enabling them to achieve their objectives, as well as their organizational goals, digital marketing metrics must be evaluated. (Yang, Shi, & Wang, 2015). Hence, identifying and measuring the most relevant metrics, i.e. key performance indicators (KPIs), will provide the company with insightful data that will guide its decision makers to developing more effective strategies. Ahmed, Jilani, Haider, Abbasi, Nand, and Kamran (2017) identified common e-commerce sales KPIs to be: sales/revenue, shopping cart abandonment rate, conversion rate, and average order size. The Marketing KPIs identified are: brand or display advertising click-through rates, time on site, page views per visit, unique versus returning visitors, and bounce rate. Lastly, the customer service KPIs identified are: customer service email count and customer service chat count.

In addition, Saura, Palos-Sánchez and Suárez (2017) state that in order to better assess digital marketing, both types of website analytics should be used. The first comprises quantitative analytical indicators which use real data to quantify different goals or conversions, while the second being qualitative analytical indicators that are used to show how the user understands a website which points out KPIs that provide insight about the online buying process and user behavior. The quantitative indicators most commonly used for e-commerce are "impressions", "traffic", "unique users", "leads", and "conversions". The qualitative indicators that they have identified are: "A/B testing", "call to action", "user experience", "rating systems", "surveys and forms", and "flow of users". Moreover, the authors defined the basic KPIs that companies should follow and analyze with web analytics in their digital marketing strategies as "conversion rate", "goals conversion rate", "type of users", "type of sources", "keywords/traffic of non-branded keywords", and "keyword ranking". Finally, according to Manfred Leisenberg (2016), the performance of mobile marketing tools must be monitored and reviewed to determine the following key performance indicators: Engagement & Usage, Lifetime Value (value of the mobile user) Customer loyalty, Active users, Impressions, Customer Journey (from first click to conversion).

This research builds on literature review and a theoretical framework to propose a conceptual model that will pave the way for an empirical study that quantitatively tests the model fit and the relationships among the variables. These KPIs lay the groundwork for the aforementioned deeper study that would help narrow which ones should be utilized in the quantitative approach.

3. Conceptual Model and Hypotheses

In order to better understand how people interact with various elements of mobile user interface design as well as website designs, a conceptual model depicting the relationship between the two key design types of the platforms on one hand and performance on the other. This combination will provide insight as to which aspects greatly shape not only first impressions but also the overall user experience. Indeed, a future empirical assessment will provide intel to help identify the drivers of the key performance indicators.

The foundation of this new model was based on the theory of "form and function" by Townsend, Montoya, and Calantone (2012) and was developed further using Cebi's hierarchy of design characteristics of 2013, as well as Bai, Law and Wen's conceptual model of a website quality. The functional constituents are based on Perea and Giner's principle of minimizing "cognitive load", their standard of "minimal viable product" as well as Manfred Leisenberg's key performance indicator "customer journey" (2016). The purpose behind the development of this model is to serve startup digital businesses the framework for them to develop the most effective e-commerce virtual space design. The research is based on the design needs and expectations of potential viewers, customers, and shoppers. As such, the displayed information of products and services, as well as the choice of wording is not part of the scope of this research. Additionally, assessing the visual qualities of good design in portraying reliability cannot affirm a secure nor reliable processing of data or personal information. Hence, good design might give the impression of security, but the technical mechanics of back end IT is not part of the scope of assessment.

Based on the aforementioned theoretical framework and the literature review, the following propositions and research model could be proposed:

P1: At the start of a consumer journey, aesthetic design is more important that functional design to make a good first impression.

P2: Functional design is more impactful on the overall customer journey than aesthetic design if aesthetic passes the minimum threshold.

The proposed research model can be depicted as follows:

The research model holds that aesthetic design is composed of organization, color, font, logo, media/ images/ videos, icons, and other supporting elements, most of which are mentioned by Schultz and cited by Cyr et al. 2006, to define aesthetic design. In the event where aesthetic design meets a minimum threshold of the customer's impression, the consumer journey continues and allows the opportunity to experience the functional design.

The functional design is composed mainly of a consumer journey as stated by Perea and Giner, as well as their principles of minimum cognitive load and minimum viable product. If all principles are considered and accounted into the design, the consumer journey continues. Despite the model's breakdown of aesthetic and functional design variables, in reality, all of these factors work together, and are not mutually exclusive. Their effects overlap and are seen as a holistic entity.

The next future step in this study is applying a mixed method approach in order to test the model both qualitatively and quantitatively. "Qualitative content analysis is defined as a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns"

(Hsieh & Shannon as cited by Jadhav & Khanna, 2016). Certain criteria will be set forth to assess the "impressions" and "expectations" of websites' and mobile applications' users, thus allowing for thematic analysis to be conducted. These impressions and expectations, based on the literature and the theoretical background, are anticipated to provide a framework for the development of the following code categories: "Expectation" and "Impression". Moreover, examples of online and mobile platforms will be assessed to better understand how the successful ones are weathering local market challenges, as well as to extract common pitfalls from some of the ones which failed.

4. Conclusion and Recommendations for Future Work

Aesthetic and functional design should both meet a basic threshold in order for a complete and memorable customer journey. The insights unveiled in the study suggest that there's a sequence of impressions and expectations that a user develops while experiencing the aesthetic and functional designs of websites or mobile applications. Such impressions and expectations may potentially influence the customer journey either positively or negatively.

Another key insight that was revealed in this study relates to the concept of trust. The authors suggest that trust is a consequence of the successful integration of functional and aesthetic elements, and not just the preexisting reputation of a brand. They also propose that only when the aesthetics meet a certain threshold of expectations will customers direct their attention to the functional aspects of the website and its MVP. The aesthetics act like a façade, they either initiate or annihilate the customer journey, and in the case of passable aesthetics, functionality becomes the key player of the journey. The major factor of functional design that must be met for the hope of continuity of a website or mobile application is to meet the minimal viable product, whereby no glitches, bugs, or broken links may be found, and registration and check-out processes are fool proof.

The main recommendation of this study would be to use this research as a groundwork for a large, more insightful and detailed study which should include both qualitative and quantitative data collection and analysis. This could provide a better assessment of the essential KPIs for digital businesses to link to their platform designs and performance.

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Biographies

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Abdul-Nasser Kassar is an associate professor at Adnan Kassar School of Business. He holds a PhD in Mathematics from the University of Louisiana, Lafayette, and has received the Post-Doctoral Bridge to Business Program certificate from the University of Florida. With a background in both mathematics and engineering management translated by two master degrees from University of Louisiana, his research ranges from cryptography to engineering management and its underlying mathematics. His research has been published in recognized journals

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Tala Nassar has an honors BFA degree in graphic design from The American University of Beirut and an MBA from the Lebanese American University. She works as a freelance designer. Through the research she conducted at LAU, and her freelance design work, Tala has attempted to understand the role of design in online business models and aspires to continue her research in order to find a clearer common ground between design and business.

Figures



Fig. 1. Design Aesthetics and M-loyalty (Cyr et al, 2006)



Fig. 2. A conceptual model of website quality, customer satisfaction, and purchase intentions

Tables

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Website design parameters	Main design parameters	Sub-design parameters	Explanation		
C ₁	Usability C ₁₁ C ₁₂ C ₁₃	Ease of use Ease of learning Memorability	The users should reach its aim in short time while using the site first time The users should be adapted the site in short time The users should remember the functions presented by the site		
C ₂	Visual Aspects C ₂₁ C ₂₂ C ₂₃	Layout Graphics Text	The site should present good visual organization The site should present good tonality The site should present readable font		
C ₃	Technical adequacy C ₃₁ C ₃₂ C ₃₃ C ₃₄	System availability Speed Accessibility Navigation	The site must be reached any time The site should provide quick loading, accessing, and using The site should provide easy access to materials The site should provide easy navigation to reach services		
C ₄	Security C_{41} C_{42} C_{43}	Reliability Accuracy Privacy	The service protect users from hackers' attack while downloading a file or surfing The service provide correct information The site protects users' information		
C ₅	$\begin{array}{c} Communication \\ C_{51} \\ C_{52} \\ C_{53} \end{array}$	Contact Info Online Help Responsiveness	The site should provide contact addresses and phone numbers The site should provide an assistance service through phone or internet The site should handle user's problems and return to users in a short time		
C ₆	Prestige C ₆₁ C ₆₂ C ₆₃	Reputation Sustainability Currency	The site should be well known The site should guarantee to serve for a long time The site should provide continuous improvement		

Hierarchy of website design characteristics (Cebi, 2013).

Design	Details
Avoid scrolling, especially horizontal scrolling.	It is better to limit the page length and format the page to fit the screen width in order to avoid scrolling.
Use a flat hierarchy	Since every step takes longer on handheld devices, a flat hierarchical structure with fewer steps is preferred.
Design a navigation system consistent with a regular Web browser.	The design of handheld devices and browsers running on them must adopt similar metaphors and layout should resemble regular Web browsers.
Design a "Back" button with the same function as it has in a regular browser.	It is better to implement in wireless applications a "Back" function that is the same as its counterpart on a regular browser.
Provide a history list that records the order in which hyperlinks have been traversed.	The history list should present previously visited Web sites as a stack.
Provide indication of signal strength and downloading progress on every screen.	Downloading progress help users determine the speed of data transmission.
Do not require users to remember items.	Provide appropriate navigation to bring users back to the data entry page after reviewing the codes, or provide a help screen without leaving the data entry screen.
Limit the search scope to improve search efficiency.	Improve the search precision by intelligent query support and predefined search options.

Table 2. Recommended Design Guidelines for M-commerce (Ahmad and Ismail, 2017)

Table 3. 7 Design Elements of Customer Interface	(Lee & Benbasat, 2003)
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	M-Commerce					
7Cs of Interface Implementation	Mobile Setting To support consumers; limited attention	Mobile Device Constraints To complement the insufficient display of mobile devices				
Context	Menu structured in a shallow rather than a deep hierarchy Layered sequential process rather than field selection process	Summary and keywords that give a whole picture of information separated over pages.				
Content	Proximate selection method that makes nearby located-objects easier to choose (gas stations, bank accounts)	Conversion of visual information to audio format Use of non-speech sound				
Community	Connection to shopping companions who share interests in common	SMS, and graphics describing products, transferred through a user's phone book				
Customization	Proximate selection method that emphasizes the object of interests, by combining a user's mobile setting (location, time, and resource) with his or her personal interests	Personalized service based on known user profile (content and layout configuration without a need of log-in registration)				
Communication	Targeted advertising suitable at the point-of- purchase	Customer feedback in multiple-answer or multimedia formats				
Connection	Adaptive map that shows the information about nearby stores	The icon that gives a link to the starting page with one-click of 'cancel' button				
Commerce	Insertion of authentication into mobile phones	One-click checkout process made available by storing a consumer's address, payment method, preferred delivery options				