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The value of design for customers in the service industry: Contributions and measurements

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In the contemporary market, quality is no longer the key differentiator for a brand. Among the marketing activities available, design is arguably acknowledged as the most distinctive method for achieving long-term brand recognition. Unlike technology, design emotionally interacts with people, and it is not easy to emulate a compelling design identity that has been effectively established.

Despite its well-recognised impact, companies still hesitate to strategically employ design. The main source of the hesitation may be rooted in the ambiguity of measuring design contributions. This is particularly true in the service industry where the impact of technology development is relatively lower. This makes it a suitable industry sector for investigating environments where design has a more significant marketing role.

Two major forms of research are performed within this paper: the horizontal/spectrum understanding of value, and embedding design perspectives in the service-profit chain using SERVQUAL (SERVice-QUALity) measurements. This paper proposes a model that can quantify and visualise design contributions from the customer's perspective within the service industry sector.

Keywords: Design value, service design, design value typology, measurement of value

Introduction

Final grades are occasionally painful and frustrating to face; however, fair and effective assessments can help students to acknowledge their status and performance and then go on to improve and complete more difficult work. Likewise, the intention behind measuring business performance is to identify the current status of the business as objectively as possible. As a target of measurement, how a company can effectively design its offerings and systems is essential to surviving in a highly competitive contemporary market (Moultrie, et al., 2006). In other words, the system's design, products and services are essential for a successful business. However, despite well-recognised contributions, it is difficult to reveal the effectiveness of design. This is mostly due to the ambiguity surrounding design (Cooper and Press, 1995) and a lack of theoretical and empirical research (Moultrie et al., 2006; Moultrie and Livesey, 2010). In addition, Topalian urges researchers to cultivate 'novel means of communicating' by using language from a business perspective (Topalian, 2012, p.34). Therefore, it is necessary to investigate how design effectiveness can be comprehended and measured in a successful business.

How can design be comprehended in terms of its impacts upon the success of a business? Kaplan and Norton (1996) introduced a holistic, precise and long-term measurement tool for businesses. It has four different dimensions (i.e. financial; customer; internal business process; and learning and growth) that are referred to as the balanced scorecard. Moultrie, et al. (2006) proposed a tool for assessing design performance in SMEs (Small and Medium Enterprises). Their systemic approach to success factors, both the process and the product, enables them to identify key success factors in new product development processes and confirm design contributions.

However, unlike manufacturing industries, there are subtle differences between products and services offered by service companies. Swann (2002) argues that design influences people by using artefacts and situations that possess a high level of uncertainty. Assessing the output of design activities (e.g. auditing the system for higher productivity or profitable attention towards a new product) is arguably insufficient for comprehending critical issues within the service industry sector. It is necessary to contemplate the factors beyond outputs; in other words, how stakeholders perceive the value of having interactions in a business.

To determine the sources of design value (from a customer perspective) and the linkages between phases of their perception, this research uses the concept of value and service-profit chain. Research questions are based upon the SERVQUAL measurement tool proposed by Zeithaml, et al. (1990), who introduced five dimensions of measurable service quality (i.e. tangibles, reliability, responsiveness, assurance and empathy) from a customer perspective. The SERVQUAL measurement facilitates embedding design perceptions into service-focused questionnaires. It provides service-centric viewpoints and enables the categorisation of questions that consider gradually increasing emotional attachments. These design embedded questions are to be reviewed if the questions contain design audit elements and principles, as argued by Cooper and Press (1995). This paper describes the development of a tool that measures design value in a service company from a customers' perspective.

Research methodology

Structure of the paper

The measurement tool described in this paper aims to identify customers' psychological preferences. To achieve this aim, the research is divided into the following sections:

- 1) *Literature review (defining the value in this research).* Primarily, the concept of value is critical to this research. The notion of value in customer perceptions was investigated.
- 2) *Building a conceptual framework.* Interactions within a value-creating network were identified based on how customers perceived value. Emphasising the profitability of customer retention also indicates how the conceptual framework can maintain a long-term business. In addition, there has been very little focus on determining and investigating how design influences service quality (Sangiorgi, 2009). Design for services becomes more significant since the focus of marketing and managing shifted in a human-centred direction. Thus, it is necessary to address the contributions of design beyond just its tangible aspects (Meroni and Sangiorgi, 2011).
- 3) *Creating a tool with design perspectives.* Four major dimensions of customer design value were identified and can be utilised for

measuring the design value of a business. However, prior to scaling up the tool, one critical prerequisite should be confirmed—the independence of the proposed dimensions. This is important for two reasons: first, if one dimension is affected by others, it raises a major concern about tool's practicality. The tool should suggest which dimension of design value requires focus or should be balanced to maximise invested resources from the customer's viewpoint. The tool may fail to make these suggestions if others continuously modify the dimensions. Second, if one value dimension cannot be explained by the designated questions, it is possible that the design embedded SERVQUAL questions cannot represent each value dimension. A quantitative data collection was performed to confirm this prerequisite.

- 4) *Validating the tool.* Within the service industry sector, the food service industry (especially cafés) was selected as having characteristics typical of postmodern consumer behaviour and noticeable operationalisation of service aspects (for example, flexibility, artisan-focused and context-dependent nature) (Johns and Pine, 2002). Design in the service industry (starting with food service industry) is arguably worthy of investigation. This study employs a multiple regression analysis. The necessary information can be obtained through the following: Pearson correlation values, R squared values, regression coefficient values and its *p*-values. Pearson correlation and R squared values can confirm the hypothesis of the overall relationships between the proposed dimensions. Regression coefficients and its *p*-values can confirm the possibility of mathematising the relationships.
- 5) *Discussion, conclusion and findings.* Analysis of the quantitative data, contributions of this paper, limitations and future study directions were addressed.

Research survey design

Questions about design value are based on the SERVQUAL measurements (Zeithaml, et al., 1990), but they are modified and classified according to design audit perceptions and design value dimensions. To determine the statistical significance of utilising the proposed framework as

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a tool, this study performed a random survey to gather quantitative data. The survey questions were distributed online and through field surveys. However, there are two major methodological concerns in this research: overgeneralising survey responses and the relevance of customers' experience.

- (1) *Overgeneralising survey results.* To reduce the variation between companies within the service industry sector, the target was constrained to cafés. Due to its flexible and light capitalistic character, the café industry contains various aspects of post-modern consumer behaviour (Thompson and Arsel, 2004). Thus, investigating the café industry will be representative and less variable.
- (2) *Relevance of customers' experience.* An on-site field survey can minimise the distortion of experiences. This research also included an online survey to acquire a sufficient number of responses. This research attempted to reduce possible response distortions by asking for the date on which the experience occurred (5%–15/277 of samples indicated that their experience were older than 180 days).

The overall survey responses are shown below in *Table 1*.

Table 1. Summary of survey responses

Sort		Result (Total:277)	
Nationality	Asian	146	52.7%
	European	24	8.7%
	American	107	38.6%
Gender	Female	159	57.4%
	Male	118	42.6%
Age	18 – 25	49	17.7%
	26 – 35	140	50.6%
	36 – 45	61	22.0%
	46 – 55	23	8.3%
	55 +	4	1.4%
Date of experience (within)	A week	149	53.8%
	A month	82	29.6%
	Three months	31	11.2%
	Six months	15	5.4%

Literature review

Definition of value

A brand's value represents more than its positive financial output. From a marketing point of view, it can be a commitment to offer superior value to customers (Bruce, 2011). Pursuing and providing higher customer value in a consumer context is a key marketing activity (Holbrook, 1999). Value is an intangible element which stems from consumers' preferences about tangible aspects and pervades the overall procedure of purchasing (Wagner, 1999). Despite the ambiguity of the concept, it is proposed that a summary of customer values that encompasses contemporary issues and definitions as follows:

Customer value is a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations. (Woodruff, 1997, p. 142)

This definition is inferred from what Woodruff suggested in the customer value hierarchy model in *Figure 1*. Given that this model is dynamic and embraces different levels of customer value, it explains value well and will contribute to future studies (Parasuraman, 1997). In short, customer value evolved from simple dimensions of interaction into multiple relationship behavioural factors.

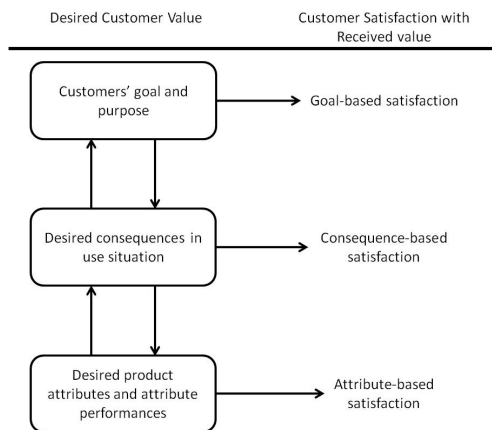


Figure 1. Customer value hierarchy model (Woodruff, 1997, p.142)

Sánchez-Fernández and Iniesta-Bonillo (2007) classified two types of consumer value research: uni-dimensional and multi-dimensional. They argue that the former relies on customers' rational consumption behaviours and considers costs and benefits; the latter facilitates a broader analysis of value. In a sense, these dimensions may have various origins for evaluating value; it is worth investigating these dimensions to understand their relationship.

One of the pioneering pieces of research was based on the uni-dimensional approach (price-quality based) and was introduced by Monroe and Chapman (1987). They argue that perceived value can be aggregated with the acquisition value (maximum acceptable price minus actual price) and transaction value (reference price minus actual price). This view (Monroe, 1973; Dodds and Monroe, 1985) is restricted to the price-quality view; it raises questions about the role of price in quality perception and other influencing factors relevant to the multi-dimensional approach. Zeithaml (1988) adopts Dodds and Monroe's model and modifies it to explain different levels of attributes. Given that customer perceived value consists of benefits (salient intrinsic attributes, extrinsic attributes, perceived quality and other relevant high level abstractions) and sacrifices (monetary and non-monetary prices), the customer perceived value can be defined as 'a customer's overall assessment of the utility of a product' based on the customer's perceived trade-offs (Zeithaml, 1988, p.14). The hierarchy of elements determines whether offerings fulfil customers' utilitarian product-based goals and was proposed by Zeithaml's (1988).

However, the uni-dimensional approach is often criticised due to difficulty encompassing contemporary consumer behaviour when using complex relationships (Yi and Gong, 2013) and its narrowed scope of product-only attributes (Sánchez-Fernández and Iniesta-Bonillo, 2007). In addition, understanding hierarchy and dimensions of value is crucial for encompassing variables in a model of business relationships (Ulaga and Eggert, 2005). Thus, the multi-dimensional approach was noticed for its understanding of contemporary consumer behaviour and the research stream of value, including uni-dimensional approaches as shown in *Figure 2*.

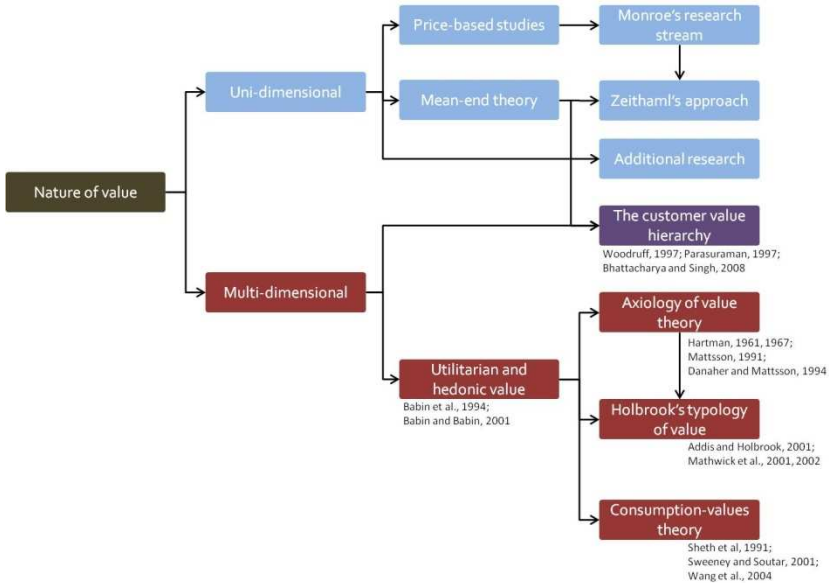


Figure 2. Research streams of perceived value (Sánchez-Fernández and Iniesta-Bonillo, 2007, p.430)

This research considers value as a complex, interrelated holistic output of what customers offer; therefore, multi-dimensional approaches (as seen in the above research stream) are reviewed. Multi-dimensional approaches posit that there are more than two factors (*dimensions*) involved in building perceived value. Within the literature (specified in Figure 2) the relationship between dimensions can be classified as hierarchic and non-hierarchic, as shown in Table 2. Due to its relevance to contemporary consumer behaviour and customer-centric viewpoint, this paper is focused on non-hierarchic relationships.

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Table 2. Hierarchic and non-hierarchic relationships within multi-dimensional approaches

	Author(s)	Dimensions
Hierarchic relationships	Bhattacharya and Singh, 2008	End-state Consequence Attribute
	Hartman, 1961, 1967	Systemic Extrinsic Intrinsic (transformational)
	Mattsson, 1991; Danaheer and Mattsson, 1994	Emotional Practical Logical
Non-hierarchic relationships	Woodruff, 1997; Parasuraman, 1997	Goal-based Consequence-based Attribute-based
	Babin et al., 1994; Babin and Babin, 2001	Utilitarian Hedonic
	Sheth et al., 1991	Functional Social Emotional Epistemic Conditional
	Sweeney and Soutar, 2001	Functional (Quality and Price based) Social Emotional
	Wang et al., 2004	Functional Social Emotional Perceived sacrifice
	Addis and Holbrook, 2001	Utilitarian Hedonic Balanced
	Mathwick et al., 2001, 2002	Playfulness Aesthetics Consumer Return on Investment Service excellence

Contemporary consumer behaviour changed after the era of 'Fordism'. In Maslow's hierarchy, the increased number of choices within a competitive market can be interpreted as being lower levels of need, which are already fulfilled basically. That makes consumers perceive the value of an offering in different ways than outlined by Maslow's hierarchy of needs. In other words, what customers need is determined by various circumstances related to material abundance and does not concern fulfilling basic hierarchical needs. Therefore, understanding how customers value offerings in a non-hierarchic relationship can also explain contemporary consumer behaviour.

Holbrook argues the typology of consumer value using a holistic and non-hierarchic viewpoint (Holbrook, 1999). It is regarded as a sophisticated typology which explicates modern consumer behaviour (Addis and Holbrook, 2001; Sánchez-Fernández and Iniesta-Bonillo, 2007). Holbrook describes the

nature of consumer value (interactive, relativistic, preferential, and experiential; Holbrook, 1999, p.5) and the types of consumer value (extrinsic or intrinsic, self-oriented or other-oriented, and active or reactive; Holbrook, 1999, p.9). In Holbrook's detailed explanation, extrinsic and intrinsic dimensions determine whether consumption is the ultimate goal of the customer. Self- and other-oriented values are classified based on whether consumption is for the consumer or purchased with consideration of others' reactions in mind. If customers manipulate products or services either physically or mentally (e.g. driving a rented car is physical and solving puzzles is mental), value is situated to the active dimension. On the other hand, if customers are being manipulated by the product or services (e.g. feeling sentimental while watching a movie), value belongs to the reactive dimension. These dimensions are described below in *Table 3*.

Table 3. A typology of consumer value (Holbrook, 1999, p.12)

		Extrinsic	Intrinsic
Self-Oriented	Active	Efficiency (Output/Input, Convenience)	Play (Fun)
	Reactive	Excellence (Quality)	Aesthetics (Beauty)
Other-Oriented	Active	Status (Success, Impression Management)	Ethics (Justice, Virtue, Morality)
	Reactive	Esteem (Reputation, Materialism, Possessions)	Spirituality (Faith, Ecstasy, Sacredness, Magic)

This study employs Holbrook's typology of consumer value as a key background theory for numerous reasons. First, Holbrook's typology of value includes a holistic view of how value is perceived from offerings presented to us. Stakeholders within the value-creating network are comprised of groups of individuals who determine the value of offerings based upon their experiences within the network; it is crucial to consider the origin of perceptions through emotionally classified typologies. For example, Aspara and Tikkanen (2008, 2011) argue that positive personal association is significant for determining stock purchases—even in a highly financial-oriented relationship. Second, the aim of this study is to propose a tool that can explain how the value of a design can be measured and visualised. In order to achieve this aim, previously classified value dimensions are modified to include design in all its manifestations. By utilising Holbrook's typology of consumer value, the value of design can be classified in each of

Holbrook's dimensions. Third, since awareness of social responsibility has increased since the era of mass production (i.e. Fordism), it is necessary to investigate the factors that determine human perceptions. In addition, solutions for socially responsible projects may be proposed through design (Cooper and Press, 1995). Thus, it may be critical to investigate how people think and the origin of their perceptions. Given that Holbrook's typology classifies psychological factors for the decision-making process of consumers, the result of assessing value through Holbrook's typology can present individual and collectively perceived value.

Conceptual framework

Co-creation of value

If value is perceived holistically and in a non-hierarchic way, as described previously, it is worthwhile to investigate how value is created and influences stakeholders. The emergence of new cultural boundaries has been caused by greater fragmentation, pluralism and older, weakened collective solidarities in contemporary markets; these have triggered change in consumer behaviour (Amin, 1994). Developments in modern technology have encouraged involvement by creating value from stakeholders who were formerly passive buyers or observers. The value of a brand (shop) no longer exists for one specific stakeholder but for every stakeholder who directly or indirectly influences it.

Since maintaining a business involves more complex relationships between stakeholders, some may argue that it can be impossible to satisfy every stakeholder within the network. Instead, they insist that focusing on one stakeholder's value can maximise the overall efficiency of the resources used. However, in the contemporary market, it may be argued that the most significant stakeholder in maintaining business is not a single group or a single stakeholder. The central stakeholder, in terms of measuring any given value, can change as each value is measured and evaluated. For example, businesses that participate in Fairtrade® or "ethically sourced" content for their food products include logos on their packaging that is designed to increase awareness of responsible consumption. In the past, the value of everyday food stemmed from providing high quality food at low prices (consumer-centric value). Today, the value of everyday food in the contemporary market has the added dimension of social responsibility, which includes suppliers and local communities (multiple stakeholder value). From a long-term perspective, considering multiple stakeholders within a

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network will provide agility in a business model and therefore allow the business to survive.

In addition, it is also important to consider multiple groups of customers within the value-creating network. Borja de Mozota argues that managers in process-oriented companies are being challenged to develop a solution that is applicable to multiple users (Borja de Mozota, 2011). Not only the providers of value, but also the receivers of value may be comprised of more than one group within a business network.

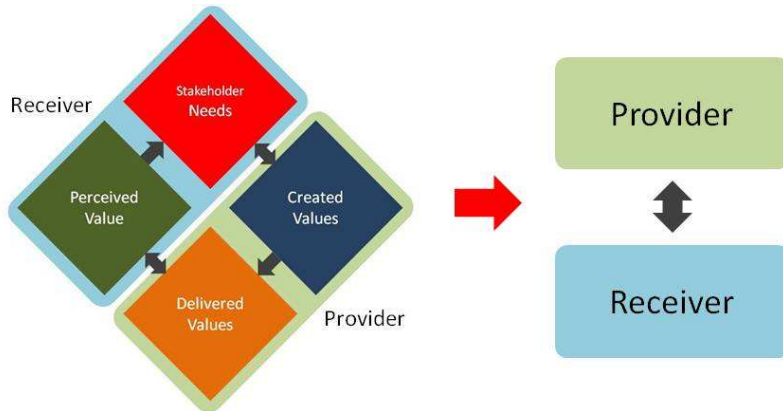


Figure 3. The conceptual framework of sustaining a business

Figure 3 illustrates the conceptual framework of sustaining a business and how to determine this relationship. To maintain a profitable business, the series of activities expressed in the diagram (emergence of needs, created value, delivered value and perceived value) must keep circulating. Exceeded positive value enriches the business environment of a society and stimulates expectations for another transaction (Holbrook, 1999). Within these activities, Nam and Carnie (2014) argue that there are mutual relationships between stakeholders' needs and created values; delivered values; and perceived values. The development of information technology and the increase of social responsibility enable mutual relationships between those phases. Activities within the sustainable business may be classified as being a provider or receiver. Thus, the mutual relationship and the co-creation of value enhance the overall value of a network.

Conceptual framework for the service industry

The aforementioned framework is relevant to the service industry for two reasons: it promotes mutual relationships between stakeholders, and it provides a continuous loop of value-related activities. First, the mutual relationships between stakeholders are particularly emphasised because of what service companies offer when an interaction takes place. For example, if customers are fully satisfied with employees' services, customers may show their trust and appreciation. Employees may also feel respected and well appreciated. This relationship can help to increase value of the network for both parties. Since design can intervene in the service experience of stakeholders (Meroni and Sangiorgi, 2011), the interactions of building service experiences also need to be addressed by investigating mutual relationships within the network. Second, the continuous loop of activities can be interpreted as retaining stakeholders. Retaining stakeholders, (customers in this research) is crucial to running a service-centric business because customers become more profitable as they remain in the business (Reichheld and Sasser, 1990; Aaker, 1996; East et al., 2013). Therefore, the conceptual framework in *Figure 3* is relevant to the service industry.

In addition to the relevance of the conceptual framework, the service industry is notable from the customer's perspective. Every industry should consider the service aspects of their businesses and understand that quality service is essential for maintaining a business (Daniels, 2012). Daniels also argues that the continuous growth of the service industry is highly dependent on efficient and systemic management. Due to relatively rapid changes in the service industry, companies are being forced to adapt to the contemporary market situation (Sheu et al., 2003). In addition, in the service industry, leverage based on design is increasingly significant due to the ubiquity of services provided. Cooper and Press (1995) also exemplified the importance of design in the service industry. They provided an example of the financial industry by identifying, from a customer's perspective, indistinguishable services between companies. Studies by Best (2006) in the service sector illustrate customers' potential ongoing difficulties in distinguishing the impact of design in a variety of service sectors.

The paradigm shift also encourages the creation of an appropriate methodological tool for understanding service design (Meroni and Sangiorgi, 2011). Putting design(er) at the core of creating solutions to customers, Manzini and Vezzoli (2003) describes characteristics of services as value adding product life cycle, offering final result and enabling platform. Adding value by service elements can be viable through customised solutions,

information & communication technology and specialised services (Meroni, 2008). According to Meroni and Sangiorgi (2011), design has changed definitions of value creation in terms of a service's interactive perspectives. These observations demonstrate changes in perceiving design for services. They urge the development of theoretical and empirical frameworks that can encompass the contemporary requirements of service design.

Contribution of design and its measurement

In this post-Fordism era, consumer choice is significant and arguably increases the influence of design (Cooper and Press, 1995). As influence increases, the impacts and contributions of design (as a company's strategic tool) also become notable. Cooper and Press (1995) have classified the contributions of design as a strategic goal into three elements: securing a distinctive niche, surviving in a mature industry and competing globally. This can be achieved by various activities from stakeholders within the value-creating network.

Having established these activities, it is necessary to develop a suitably effective measurement tool. How can these activities' effectiveness be measured? It remains a challenge to assess the impact and contribution of design through a quantified method (Hands, 2011). In addition, when it comes to acknowledging design contributions, designers are still highly depended upon peer review or numeric business figures, such as sales increases, market share and reputation (Borja de Mozota, 2011). However, it can arguably be difficult to obtain measurement objectivity through peer reviews. Since numeric business figures are the outcome of company-wide activities, the contribution of design becomes blurred, and it becomes challenging to distinguish it from the company's overall outcome. Therefore, it is worth seeking the contribution of design in direct ways.

This paper aims to determine a framework of value(s) that are affected by design. The contribution of business activities, including design, drives the competitive advantage of a business/nation. Likewise, a business/nation requires a competitive advantage for their survival in this highly globalised and competitive marketplace. A value-creating network is arguably required to obtain such a competitive advantage for any given business/nation. This competitive advantage is derived from the activities of stakeholders within the value chain (Porter, 1990) in the sense that the perception of stakeholders towards the network is not circumscribed by financial benefits. Activities' contributions need to be interpreted holistically through the concept of value. Given that design activities (whether they are micro- or

macro-scale) aim to create value (Borja de Mozota, 2011), it is essential to understand the contribution of design through value.

When assessing whether investments in design are effective, Borja de Mozota explains three advantages of utilising the balanced scorecard: it provides a dynamic and long-term perspective; it is applicable to any design project or decision; and it broadens the design outcome of financial perspectives (Borja de Mozota, 2011). Given that the balanced scorecard includes the financial benefits of design, the objectivity of design investment (both financial and non-financial) can be realised. Moreover, the four perspectives (financial, customer, internal, and learning and growth) in the balanced scorecard represent the holistic view of a business's performance. However, there are some limitations when employing the balanced scorecard for investigating the value of the previously mentioned network (*figure 3*).

Since the balanced scorecard is a 'results-based' view of company-based activities it is difficult to include the causes behind each stakeholder's decision to remain within the network. In this paper, the key issue of assessing quantified results will be applied within the service-profit chain. Thus, relationships among co-created value, satisfaction and loyalty can be investigated. Furthermore, due to the dynamic character of the contemporary business situation, it is crucial to be agile in order to transform the strategic weight of stakeholders. For example, when there was no cognition of the corporate social responsibility, putting an 'ethically-sourced' sign or Unicef logo may not be as effective as it is today. It can be interpreted as the emergence of another significant stakeholder within the network, suppliers and local communities. In other words, even if the assessed value of a brand or a business is superior to its competitors, if it is mistakenly focused on stakeholder's superior value, the brand/business may not be able to offer superior value to stakeholders. It is essential to balance the relationships between stakeholders and the relative weight of their value perceptions.

Design embedded existing theories

When design and other business concepts (e.g. organisation, reputation or strategy) are combined (Borja de Mozota, 2011) more efficient design contributions can be achieved. Thus, if design perspectives can be successfully embedded within aforementioned business concepts, it can facilitate a distinct evaluation of a design's contribution. *Figure 4*

summarises the output of this section: the overall layout is based upon the service-profit chain. How customers view the design value of the network has four dimensions (i.e. design as tool, goal, rank and help) and is determined by design embedded SERVQUAL questions. The SERVQUAL questions were modified to reflect design perceptions by selectively choosing design audit elements and principles (Cooper and Press, 1995). The present paper will investigate whether the design embedded questions can successfully quantify and visualise created value for customers. This section demonstrates how customers' co-created design value can be quantified and visualised.

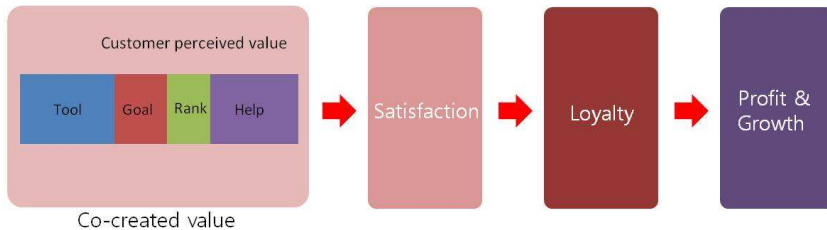


Figure 4. Summary of design embedded service-profit chain

Design Value typology

Although Holbrook's typology of customer value includes various aspects of value, some researchers argue that ambiguity exists between active and reactive values in Holbrook's typology (Leclerc and Schmitt, 1999; Solomon, 1999; and Richins, 1999). To dissipate the ambiguity between active and reactive value concepts, they can be combined as one dimension and named as shown below in Figure 5.

		Extrinsic	Intrinsic
Self-Oriented	Active	Efficiency (Output/input, Convenience) <u>Tool</u>	Play (Fun) <u>Goal</u>
	Reactive	Excellence (Quality)	Aesthetics (Beauty)
Other-Oriented	Active	Status (Success, Impression management) <u>Rank</u>	Ethics (Justice, Virtue, Morality) <u>Help</u>
	Reactive	Esteem (Reputation, Materialism, Possessions)	Spirituality (Faith, Ecstasy, Sacredness, Magic)

Figure 5. Holbrook's typology of consumer value (clustered by four dimensions)

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To reflect design perspectives, the four dimensions of value are interpreted as follows: design value as a tool, design value as a goal, design value as a rank, and design value as help. These dimensions can be quantified and visualised as shown in *Figure 6*. Its measurement may be calculated by determining the area of the blue, red and green diamonds on the figure below using the design value equation (see *Figure 7*). The diamond area can be used to investigate phases within the service-profit chain. If the diamond area can represent the co-created design value of customers, then the relationship between the diamond area and the next phase in the service-profit chain (satisfaction) may be examined by a single regression analysis. In doing so, one can investigate whether the co-created design value positively influences design satisfaction.

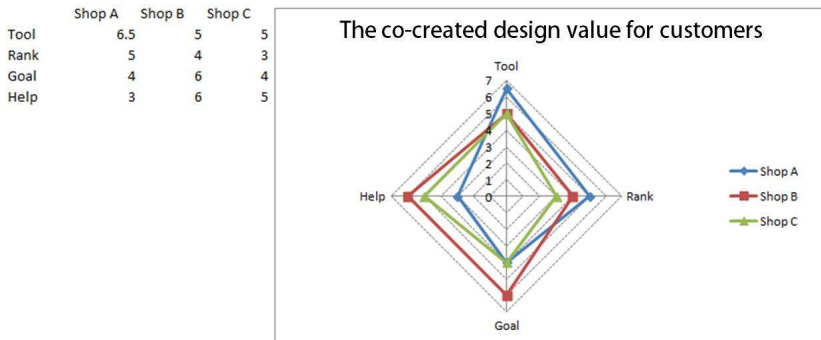


Figure 6. Example of measured co-created design value for customers

$$\text{Sum of total customer design value} = \frac{(\text{Tool} + \text{Goal}) \times (\text{Rank} + \text{Help})}{2}$$

Figure 7. The design value equation

The service-profit chain

From a long-term perspective, network stakeholders should continuously be involved in activities that create value. Loyalty is essential for encouraging stakeholder retention. Although loyalty is driven by satisfaction, as shown in *Figure 8* (Heskett, et al., 1994), some may argue that satisfaction can directly impact the profit and growth of the network. Therefore, it is necessary to examine relationships between the phases in the service-profit chain.

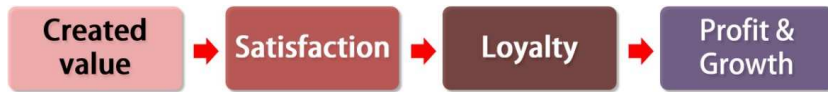


Figure 8. The service-profit chain (Heskett, et al., 1994)

Customer satisfaction is one of the most significant indicators of customers' return business (Dube, et al., 1994). Spiteri and Dion (2004) identified the two types of satisfaction: transactional and overall satisfaction. To assess the long-term relationship, they suggest measuring the overall satisfaction derived from total experience because it is more relevant. In addition, Kumar, et al. (2011) insist that operation performance as perceived by customers need to be construed as a whole system approach, not as individual elements. Thus, customer satisfaction is defined as an overall assessment of future behavioural intentions; it considers what customers receive based on what a company provides (McDougall and Levesque, 2000).

As shown in the aforementioned service-profit chain, researchers also insist that loyalty is derived from satisfaction. It has been empirically proven that end-user loyalty, which could lead to customer repurchases, is more significantly derived from overall satisfaction than customer value (Spiteri and Dion, 2004). Although their practical research area is limited to the pharmaceutical industry in business-to-business situations, the results clearly indicate that overall satisfaction drives customer loyalty and overall satisfaction is driven by customer value created by the company. This result supports the idea that co-created value does not directly affect stakeholders' loyalty. Instead, it is necessary to have a mediating phase for the design satisfaction of stakeholders. Likewise, other phases can be adapted to design perspectives, such as design loyalty and co-created design value.

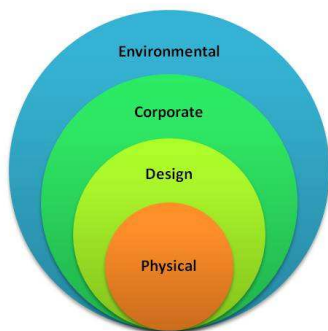
Design audit and SERVQUAL

Cooper and Press (1995) argue that there are three levels to consider when a design is audited: the corporate philosophy and strategy; how the company operates; and how design function communicates. Later in their research, Cooper and Press extend this broad view to explain the four hierarchies of design audit (1995, p.214).

- I. Physical manifestations of design*
- II. Design management*
- III. Corporate culture*
- IV. Environmental factors*

By employing this view, design activities within a corporation can be clearly classified; thus, the design audit for functions within the company can be addressed. However, since the co-created value introduced in this paper consists of stakeholders who are involved in the value-creating network, it is necessary to investigate beyond corporate viewpoints to encompass the values of other relevant stakeholders.

Despite its business-centric restrictions, Cooper and Press's arguments can be understood as key factors of composing the value of employees and other stakeholders. Leadership, competencies, management and people are positively related to the loyalty of employees, which may stem from greater employee value and satisfaction in their work (Martensen and Grønholdt, 2001). These principles are already embedded in the hierarchy of design audit as shown in *Figure 9*. The SERVQUAL questions were selectively reviewed using the audit elements and principles to reflect customer perceptions. The modified questionnaire includes sections of satisfaction and loyalty for utilising the service-profit chain (please refer to the appendix).



Physical manifestations of design

- Visual identity
- Corporate design standards
- Product
- Work environment
- Pre-project

Design management

- Design resources: human, physical, internal, external
- Design skills
- Design training
- Design management: process, procedure, guidelines
- Design funding: investment and return
- Design department: location, services, aims and objectives
- Project management

Corporate culture

- Corporate design strategies
- Design awareness/understanding
- Design champions
- Design and other function integration
- Design activities undertaken

Environmental factors

- Market trends which could impact design decisions
- Design trends
- Legislation
- Standards

Figure 9. The levels that organisational design audits might address (Cooper and Press, 1995, p.214)

Although co-created value stems from all stakeholders within the network, this study investigates customer perception to confirm independence as a prerequisite to the dimension of value. The questionnaire was designed to reflect four dimensions (i.e. design as tool, design as goal, design as rank and design as help) followed by the service-profit chain phases. By utilising the questionnaire, one can investigate how customers' value offerings, satisfaction and loyalty can be based upon these four dimensions. Given the aim of this paper, the focus is on whether the above framework is relevant to further studies investigating the holistic view of co-created design value across all stakeholders. Since customers are regarded as the major stakeholder within a value-creating network, this study researches customer perception to test this proposed framework.

Independence of value dimensions

Each of the four dimensions in Figure 5 is a discrete category and is individually affected by stakeholders. When a business requires strategic decisions to improve its performance, focusing on weak points within the value diamond model's blurred dimensions can further confuse strategic focus. To utilise the visual method shown in Figure 6, each dimension should

not be correlated. Thus, multiple regression analyses were performed to investigate any potential relationships between dimensions.

This study performs quantitative data analysis to confirm the independence of each dimension. Questions are designed in the seven-point Likert scale as the SERVQUAL measurement. By examining survey responses with the multiple regression analysis, one can calculate the relationship between one dimension and the other three dimensions and their impacts upon each other. This study employs the alpha level as 0.05, a seven-point Likert scale, and 0.03 as an acceptable margin of error.

Discussion

Table 4 indicates moderate (correlation value; 0.3–0.5) and strong (correlation value; 0.5–1.0) relationships between the four dimensions. The following is the null hypothesis (H_0) of the multiple regression analysis, using the assumption of a linear relationship between each of the dimensions:

H_0 : One design value dimension is influenced by the other three dimensions.

While R squared and adjusted R squared values can be disputed by having F -values with a significantly low p -value, the H_0 of the multiple regression analysis *can be accepted* (see Table 5 for details).

Table 4. Pearson correlation value

		Tool	Goal	Rank	Help
Pearson Correlation	Tool	1.000	.512	.615	.507
	Goal	.512	1.000	.526	.310
	Rank	.615	.526	1.000	.385
	Help	.507	.310	.385	1.000

Table 5. Multiple regression analyses results

	Set input y as Tool	Set input y as Goal	Set input y as Rank	Set input y as Help
R^2	0.498	0.335	0.443	0.267
Adjusted R^2	0.492	0.328	0.437	0.259
F -value	90.104*	45.808*	72.341*	33.140*
Std. error of the estimate	0.681	1.177	0.878	0.969

* p -value < 0.001

However, to accept the hypothesis and formulate a relationship between dimensions, regression coefficients' values need to be reviewed. Table 6 below demonstrates the regression coefficients values.

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Table 6. Regression coefficients of design value dimensions

Dependent variable	Model	Un-standardised Coefficients		Standardised Coefficients	t	Sig. (p-value)	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
Tool	(Constant)	1.770	0.209		8.489	.000	1.360	2.181
	Goal	0.145	0.034	0.218	4.285	.000	0.079	0.212
	Rank	0.317	0.043	0.388	7.400	.000	0.233	0.401
	Help	0.246	0.040	0.290	6.180	.000	0.168	0.325
Goal	(Constant)	0.849	0.402		2.111	.036	0.057	1.640
	Tool	0.434	0.101	0.289	4.285	.000	0.235	0.633
	Rank	0.411	0.077	0.335	5.322	.000	0.259	0.563
	Help	0.044	0.073	0.035	0.600	.549	-0.101	0.189
Rank	(Constant)	0.452	0.301		1.502	.134	-0.140	1.045
	Tool	0.527	0.071	0.430	7.400	.000	0.387	0.667
	Goal	0.229	0.043	0.281	5.322	.000	0.144	0.313
	Help	0.083	0.055	0.080	1.521	.130	-0.024	0.191
Help	(Constant)	1.259	0.325		3.878	.000	0.620	1.899
	Tool	0.498	0.081	0.423	6.180	.000	0.340	0.657
	Goal	0.030	0.050	0.038	0.600	.549	-0.068	0.128
	Rank	0.101	0.066	0.105	1.521	.130	-0.030	0.232

If one dimension can be explained by the other three dimensions, all coefficients are necessarily statistically significant. Some p -values (help dimension in the dependent variable: goal, 0.549; help dimension in the dependent variable: rank, 0.130; goal and rank dimensions in the dependent variable: help, 0.549 and 0.130) reject the H_0 of the regression coefficients below.

H_0 : All dimensions are correlated and can be described by regression coefficients.

Despite some positive relationships between dimensions, it is very difficult to describe the relationships between the dimensions. Due to the dispute of R squared, adjusted R squared values and the rejection of H_0 of the regression coefficients, each design value dimension cannot be explained in terms of their relationships. Thus, each dimension is independent and should be measured separately.

Conclusions and findings

This paper examined how stakeholders perceive value from the network that they are involved in and how those perceptions can be quantified and visualised. By first obtaining customer perceptions, it can be argued that customers determine the value of offerings through four measurable and independent dimensions (design as tool, design as goal, design as rank and design as help). The proposed model can be practically used to enhance global strategies in international business. For example, it is important to understand local culture in global business (Robertson, 1995). If survey results are grouped by cultural boundaries, marketing activities focusing on a specific dimension can be determined by identifying relatively important values for customers.

Given that the four dimensions are derived from psychological factors, these dimensions are arguably applicable to other stakeholders. Before performing any qualitative or quantitative research, it is necessary to review questions for other stakeholders to reflect the design audit elements and principles from Cooper and Press (1995).

However, the survey target is very limited when generalising and applying the proposed frameworks as a tool. Investigating other businesses within the food and beverage service section and selecting for various cultural backgrounds among customers can strengthen the reliability of the proposed tool. Furthermore, since the perceived service quality is determined by a wider social and organisational context (Meroni and Sangiorgi, 2011), other critical stakeholders will require clarification.

In future research, it is worth investigating the main stakeholders of the service industry and their interactions as they co-create value in the network. Also, it is necessary to follow-up on how the next steps within the service-profit chain (satisfaction and loyalty) can be influenced by the dimension of design value. For example, if the design value can be quantified (as shown in this paper), can the design value positively impact the next step (satisfaction)? Likewise can the created value phase in the service-profit chain, modified to co-created design value, satisfaction and loyalty, be adapted for design perceptions (design satisfaction and design loyalty)?

Other stakeholder groups are as significant as the researched customer group for building co-created design value in the network. It is necessary to modify the questions to investigate other stakeholders' perceptions within the proposed framework. As a result, the co-created design value can be attributed to various stakeholders' perceptions. By doing so, design

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contributions in the service industry can be holistically recognised in a quantitative and visual way.

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Appendix (Survey question)

Design as Tool

1. Products and Services from the () Café are good value for money.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
2. The () Café is located in a favourable place and I like the atmosphere of the surrounding area.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
3. The () Café company has modern-looking equipment						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
4. The physical facilities at the () Café company are visually appealing						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
5. Materials associated with the service (such as tables, sofa, and tableware) are visually appealing.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

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6. Materials associated with the service (such as tables, sofa, and tableware) match well with the overall atmosphere of the café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
7. I feel comfortable to staying / hanging around at the café using the tables, chairs, sofas, tableware etc....						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
8. I like the way the () Café decorates the service materials (such as tables, sofa, and tableware)						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
9. I like the logo (or signs) of the () Café						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
10. I like the interior of the () Café						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
11. I like the location of the () Café, because it fits in well with the surroundings						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

12. I am willing to introduce the () Café to friends, because they will also like the physical design of the () Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
13. I am willing to visit the () Café again to enjoy the mood of the () Café offerings						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
14. I will keep using the products and services from the () Café, even if the price is increased. Because I like the design of the () Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

Design as Goal

1. Your main purpose of visiting the () Café is,						
1	to buy products (foods and drinks) – take-away					
2	to buy and enjoy products and services with friends or family					
3	a business purpose (meeting with customers)					
4	to spend time alone (reading books/magazines, studying, enjoying atmosphere)					
2. Considering your purpose in question 1, the design of the () Café helps you achieve this purpose.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

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3. I feel comfortable and fulfilled, considering my purpose in question 1 by using the products and services from the () Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
4. I am willing to introduce the () Café to friends who have the same purpose of visiting.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
5. I will visit the () Café again, because I trust that the () Café will provide similar or better products and services than competitors.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

Design as Rank

1. The () Café is a trendy place with the most recent design consideration.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
2. Other customers in the () Café are similar to me.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
3. I feel a sense of belonging in the () Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

4. The () Café's atmosphere reflects my characteristic						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
5. I think other visitors also like the design of the () Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
6. I am willing to introduce the () Café to friends who are similar to me						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
7. I will visit the () Café again, because I trust that the () Café will provide similar or greater products and services						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

Design as Help

1. I can find design considerations for people with physical difficulties in the () Café. (e.g. access ramp, ergonomic design)						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
2. I know that the () Café uses ethically sourced ingredients and products, because of their display or logos in sign. (e.g. Fairtrade®)						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

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3. I believe that cafés should operate in a manner that includes a diversity / range of customers and use ethically sourced ingredients and products.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
4. I can recognise from the design of the () Café that my consumption at the () Café supports others mentioned in questions 1 and 2.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
5. I think others also recognise the design of the café (design for those who have physical difficulties and using ethically sourced ingredients) at the () Café easily.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
6. I trust the () Café will continue to keep improving or maintaining current design considerations						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
7. I prefer to consume products and services like the () Café, rather than other shops which have no considerations to their suppliers or consumers.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7