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Sustainable business model archetypes for the banking industry

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ABSTRACT

Sustainable business model innovation is increasingly viewed as a lever for systems change for sustainability across businesses and industries. Banks hold a unique intermediary role in sustainable development, but also have a difficult position after the 2008 financial crisis. This paper aims to explore business models for sustainability in the service industry, particularly banking. It explores the receptiveness of customers towards sustainable business models pursued by banks. The retail banking industry in Hong Kong is the focus of this work. First, a practice review and semi-structured interviews are used to develop and validate a set of sustainable business model archetypes for the banking industry. Second, surveys are conducted to test customer receptiveness for the archetypes. Eight sustainable business model archetypes for banking are developed and validated. "Substitute with digital processes", "adopt a stewardship role" and "encourage sufficiency" are most welcomed by customers. Some archetypes seem at direct odds with current business practice, such as "encourage sufficiency". This study gives an insight to how to "do good and do well" in the banking industry. Further research on the attributes of these archetypes can be conducted to gain a deeper understanding why customers prefer banks to use these archetypes.

1. Introduction

Consumption of products and services is far exceeding the world's capacity of natural resources. According to WWF (2012), the equivalent of 1.5 planets is being used to support current human activities. Despite efforts to reduce "unsustainability", global resource consumption continues to grow, and the catastrophic consequence can be easily foreseen. There is an urgent need for a better understanding of the dynamic, adaptive behavior of complex systems and their resilience in the face of disruptions (Fiksel, 2006).

Sustainability for an organization is about looking after different internal and external stakeholders (Freeman, 2010) and in particular, the triple bottom line of People, Planet and Profit (Fisk, 2010). Hence, sustainable banking refers to delivering financial products and services, which are developed to meet the needs of people and

safeguard the environment while generating profit. It originates from terms such as ethical banking and ethical banking policy, illustrated by the case of Cooperative Bank as communicating what a business is and stands for, and strict guidelines on who the business will, or will not do business with (Harvey, 1995). According to Lynch (1991), ethical banking is about ethical practices - not merely corporate giving and investing in 'ethical' funds. In line with this, GABV (2012) defines a sustainable bank as not just doing no harm, but actively using finance to 'do good'. The financial crisis in 2008 was a crisis of unsustainability where banks did not address the balance of interests of different stakeholders, with a skewed focus on senior management's personal benefit (Polonskaya and Babenko, 2012). The crisis triggered the rethink of 'unsustainable' business models adopted by banks (Stephens et al., 2012). Banks need to re-build their image and cut costs to regain competitiveness after the crisis. Nevertheless, greenwashing can never be fully ruled out, as it is difficult to measure and assess the overall impact on individual sustainability performance and intentions.

Business models for sustainability can be a useful framework to create 'systems change' in organisations (Bocken and Short, 2015). Business models conceptualise the way business is done (Magretta,

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2002) and help to understand the drivers of a firm's objective, which could be financial or non-financial. According to Osterwalder et al. (2005), a business model can be used for analysis, innovation, performance assessment and communication. The growing interest of analyzing business models in corporate innovation implies its usefulness in sustainability innovation (Stubbs and Cocklin, 2008; Lüdeke-Freund, 2010; Boons and Lüdeke-Freund, 2013; Bocken et al., 2014). As such, sustainable business models may be the key to unlock the power of business to combat global sustainability issues.

Banks hold a unique intermediary role in sustainable development. They play a fundamental role in public policy and economic performance as well as in all forms of commerce and industry (Jeucken, 2010). For example, banks weigh risks and attach a price to these risks in the credit approval process. Through such price differentiation, banks can foster sustainability (Jeucken and Bouma, 1999). According to the semi-structured interviews conducted in this paper, in practice, banks today have environment and social assessment guidelines in place for negative screening within the lending process, but very few banks adjust the interest rate according to their borrowers' degrees of sustainability performance.

The first objective of this paper is to understand the current business models supporting sustainability, used by the service industry, particularly the banking industry, and to try to categorize them in a set of generic archetypes. This is important and useful for further business model innovation and defining a clearer research agenda for sustainability in banking. To achieve this objective, the sustainable business model archetypes in Bocken et al. (2014), a comprehensive overview of sustainable business models, are used to identify an appropriate set of sustainable business model archetypes for banks. As Bocken et al. (2014) focused on the manufacturing industry a critical assessment is needed to evaluate whether those archetypes can be applied to the banking industry or whether a revised set would be beneficial.

The second objective of this paper is to explore the receptiveness of customers towards the sustainable business model archetypes currently used by banks and the relationship with customer traction. The economic element in the triple bottom line of people, profit and planet is a crucial motivator for businesses to adopt a particular sustainable business model(s). The Natural Marketing Institute and MIT's 2011 study, "Sustainability Nears a Tipping Point", indicates that 67% of U.S. customers are now looking for greener products and sustainability is now a part of 70% of corporate agendas. As such, not directly focusing on the customer acceptance is a deficiency in current sustainability strategies (Sheth et al., 2011).

The focus of this study is the retail banking industry in Hong Kong. Hong Kong is an international financial centre; 70 of the largest 100 banks in the world have an operation in Hong Kong (Hong Kong Monetary Authority, 2016). Hong Kong was ranked the first in the global IPO rankings (The Wall Street Journal, 2015). It has the second largest stock exchange in Asia after Tokyo (Clarke-Billings, 2016). Furthermore, the Hong Kong banking system has been a role model for China, which is now the second largest economy in the world after the United States. Nevertheless, Hong Kong has also been quoted as one of the world's fastest growing tax havens, amongst countries such as Switzerland and Luxembourg, who could be criticised for nurturing corporate tax evasion (Clarke-Billings, 2016; Oxfam International, 2016). As such, this paper focuses on the *positive* sustainable innovations that the Hong Kong banking industry could pursue in light of the recent financial crisis and the need to gradually transform the banking industry. While more sustainable banks with a changed corporate purpose have emerged in different contexts, such as Grameen Bank (Yunus et al., 2010) and Triodos Bank, these types of banking are not yet

mainstream and have not seem to have led yet to a significant transformation of the banking industry. Hence, this paper seeks to map possible sustainable business model opportunities for the banking industry.

This research addresses the following research and sub questions:

Which sustainable business model archetype(s) would benefit the sustainability of banking industry?

- *Which archetype(s) would receive the best customer traction?*
- *Which archetype(s) would enhance customers' loyalty?*

2. Background

This section reviews the literature on sustainable business models and the need to focus on banks as a key industry to transform. The selection of sustainable business model archetypes is discussed. Finally, the role of customer perception and customer traction towards sustainable business models is explored.

2.1. Sustainable business model innovation

The term "Business Model" is often used rather loosely (SustainAbility Ltd, 2014), but there is a general view of its definition in academic field. Value is the focus. Chesbrough and Rosenbloom (2002) emphasize the connections that a business model provides between a firm's potential and the realisation of economic value. Osterwalder and Pigneur (2010) use a modular perspective which includes nine building blocks: key partners, key activities, value propositions, key resources, customer relationships, customer segments, channels, revenue streams and cost structure. Richardson (2008) adopts a more consolidated view, by dividing the business model into three components from a value perspective: 1. The value proposition, 2. The value creation and delivery system and 3. The value capture. SustainAbility Ltd (2014) published a research report defining business models for sustainability by using value chain analysis. Through practice review they identified 20 distinct business models falling into five categories based on the sustainable outcomes, namely, 1. environmental impact, 2. social innovation 3. financing innovation, 4. base of the pyramid and 5. diverse impact.

Business model innovation aims at finding new ways of doing business that will disrupt an industry's existing competitive rules, leading to the development of new business models (Ireland et al., 2001). Business model innovation is important to both manufacturing and service industries. According to Girotra and Netessine (2013), business model innovation is deeply rooted in the laws of economics and operations management that are universally applicable to a wide variety of industries and allows for the systematisation of the process of identifying, selecting and refining innovations. There is an urgent need for fundamentally different approaches to value creation (Coulter et al., 2013). It is vital to move beyond product and process modifications to business model innovation (Lüdeke-Freund et al., 2016|).

Innovation for sustainability specifically targets societal or environmental impact (Cooperrider, 2008). Sustainable business models as a form of sustainable innovation, balance both the competing and complementary interests of key stakeholder segments, and contextually business sustainability should manifest as economic viability and contribute to both societal and environmental sustainability (Edgeman and Eskildsen, 2013). Sustainable business model innovations seek to "create significant positive benefits or significantly reduce negative impacts for the environment and society; through changes in the way the organization and

its value-network create, deliver and capture value" (Bocken and Short, 2015, p.44).

2.2. Sustainable business models for services/banking industry

The growing significance of services (Sheehan, 2006) indicates the importance of investigating their business models. Service is created not just by the supplier and the customer but also by a network of activities involving a host of stakeholders (Gummesson, 2008). This further echoes the definition of value creation in sustainable business models, which should extend to different stakeholders, not only the value to shareholders (Bocken et al., 2013).

Commercial banks, as a service industry, play a crucial role in allocating financial resources for human and economic activity to thrive — not only for today but also tomorrow. In addition, the role of banks is to fund a stable and sustainable economy (Alexander, 2014). BankTrack, a global network of non-governmental organisations cooperating in the field of commercial banks and sustainability, launched Collevecchio Declaration in 2003. The Declaration was endorsed by over 200 civil society organisations. It states:

"*Financial Institutions must expand their missions from ones that prioritize profit maximisation to a vision of social and environmental sustainability. A commitment to sustainability would require financial institutions to fully integrate the consideration of ecological limits, social equity and economic justice into corporate strategies and core business areas (including credit, investing, underwriting, advising), to put sustainability objective on an equal footing to maximisation of shareholder value and client satisfaction, and to actively strive to finance transactions that promote sustainability.*" (Declaration, 2003)

Though the direct environmental impact of banking operations may be low, the indirect impacts are vast. There is an opportunity to use the power of banks to address the pressing needs from society through sustainable business model innovation for banking.

2.3. Focus on sustainable business model archetypes

Few comprehensive frameworks have been developed for sustainable business models, except perhaps in grey (i.e., not academic peer reviewed) literature (SustainAbility Ltd, 2014) and academic literature focusing on Product Service Systems as one type specifically (Tukker, 2004). Besides broad and dispersed academic literature on sustainability covering themes from eco-innovation (Carillo-Hermosilla et al., 2010) to Fairtrade (Reinecke, 2010), several innovations for sustainability are emerging at a rapid pace in practice, such as the move to benefit corporations (bcorporation.net) to sustain social and environmental goals as part of a profit-making business, and the drive to do more 'net good' than bad as part of a business (net-positive.org).

The archetypes in Bocken et al. (2014) were selected as a starting point as a comprehensive framework bringing together innovations from research and practice. These include eight sustainable

business archetypes (Table 1), categorized under a high-level and generic classification, namely technological, social and organisational innovation, based on the major innovation types in Boons and Lüdeke-Freund (2013).

The archetypes were selected based on comprehensiveness, the value-based approach and its methodology grounded in research and practice. First, the sustainable business model archetypes seek to unify the various examples in literature as well as emerging sustainability practice into a useful categorization under the overarching theme of business model innovation. Second, the methodology in Bocken et al. (2014) was found to be rigorous by reaching data saturation, through iteratively exploring examples from literature and practice. Third, the business models are defined by three value components - the value proposition, value creation and delivery, and value capture - based on highly cited work by Osterwalder et al. (2005); Osterwalder and Pigneur (2010) and Richardson (2008). Other overviews of archetypes were evaluated such as those proposed by SustainAbility (Clinton and Whisnant, 2014), but these seem too broad to be linked to industry-specific elements.

The main limitation is that the sustainable business model archetypes build on cases in the manufacturing industry predominantly. Hence, a further review of examples from practice was conducted to identify banking-specific examples as described in section 3.

2.4. Customer perception and loyalty towards banks' sustainable business models

The preferences of customers for any business are important to change its strategy to pursuing sustainable business models. However, companies appear to realise that they can create win-win, or even win-win-win situations, where customers, suppliers and the focal company benefit when pursuing sustainable options (Bocken and Allwood, 2012). A GMA/Deloitte Green Shopper Study for example shows that "green" consumers shop more often and spend more when they do (Fay, 2012). This is consistent with the general perception that the "Green Movement" is getting momentum, which is reflected in the growth of business. Hence, it is important to understand which archetype(s) is/are well received by customers because this contributes to the economic factor that can motivate businesses to practice sustainability.

Most customers already have close business relationships with their banks, as competition has become increasingly fierce, and customer loyalty has become a priority concern for banking institutions (Ferreira et al., 2015). Høgevold and Svensson (2012) comment that business sustainability becomes a real customer concern and when a sustainable business gets respect from customers, the corporate image is raised. Previous research has also shown that attitudes toward a brand significantly impact the customers' intention to buy the brand (Brown and Stayman, 1992; Homer, 1990). Erdem and Swait (2004) find that as the credibility of a brand increases, there is a greater chance of a specific brand being included in a customer's purchasing choice set. The link between the archetypes adopted by banks and customer traction has practical implications for businesses wanting to achieve growth and sustainability simultaneously. From the bank's perspective, higher customer loyalty can lead to a stronger competitive position resulting in larger market share and profitability (Bayraktar et al., 2012). This research will also investigate which archetype(s) would receive the best customer traction.

Specifically, banks in Hong Kong started their sustainability agendas some years ago, and, to certain extent, are able to achieve the goal of triple bottom line. For instance, Bank of East Asia, the largest local Hong Kong people-owned bank, saved around HKD5

Table 1
Original list of sustainable business model archetypes (Bocken et al., 2014).

Technological	Maximize material and energy efficiency
	Create value from waste
	Substitute with renewables and natural process
Social	Deliver functionality rather than ownership
	Adopt a stewardship role
	Encourage sufficiency
Organisational	Repurpose for society/environment
	Develop scale up solutions

million (about USD640,000) per year when they encouraged customers to accept digital instead of paper statements (SCMP, 2016). Cost was mainly saved through reducing paper and mailing expenses. Hang Seng Bank, a major bank in Hong Kong and a subsidiary of HSBC reduced 65.5 million sheets of paper and 6% in greenhouse gas emissions by using e-Statements, e-Advice and shareholders e-communication services (Hang Seng Bank, Corporate Sustainability Report, 2016). Hang Seng Bank has been implementing sustainability for years in Hong Kong, which has a positive impact to its corporate image. It received awards, e.g., The Reader's Digest Trusted Brands Awards 2016 and Hong Kong Leaders' Choice Brand Awards 2016 and it was the most recommended bank by customers in an annual Banking Study for 12 consecutive years since 2004 (Hang Seng Bank, Corporate Sustainability Report, 2016). These examples demonstrate how specific banks in Hong Kong can benefit from sustainable business model innovation.

3. Methods

This research investigates the following: 1. The categorization of the sustainable business model archetypes for banks and 2. Customer traction in relation to these new 'financial archetypes'. Grey literature review and examples from practice were collected to develop an initial new set of sustainable business model archetypes for banking. To this end, the sustainable business model archetypes by Bocken et al. (2014) were checked for comparison. Second, semi-structured were used to check this initial set and make improvements and additions where necessary. This led to a revised set used for the survey on customer traction. A structured questionnaire survey was conducted to test customer traction on each archetype, based on the new set of archetypes found in the first part of the study. Fig. 1 shows the overall methodology of this research and further detail is given next.

3.1. Research method to develop sustainable business model archetypes for banks

The first part of the research method was qualitative. The following question was investigated: *Which sustainable business model archetype(s) could benefit the sustainability of the banking industry?* To investigate this, a method similar to the original one in Bocken et al. (2014) was adopted (upper part of Fig. 1). Selection criteria are set for choosing the innovative examples: Innovations that have the potential to, or actually change the value proposition to the environment or society, either by creating new value, or by significantly reducing negative impacts on the environment or society. The upper part of Fig. 1 summarises the process of developing sustainable business model archetypes for banks.

The steps for answering research question 1 are summarised as follows:

1. Real-life examples and practices were collected and reviewed by reading predominantly grey literature (i.e., not subject to academic peer-reviewed), such as banks' sustainability reports, the sustainability section in their websites and trade journals (e.g. *Chartered Banker, Banking Today, The Banker*), where such examples appear. 37 banks' sustainability reports were selected for review from the banking industry leader table in RobecoSAM Sustainability Yearbook 2015 (Appendix A). These 37 banks were selected from 2800 companies based on their Corporate Sustainability Assessment. In addition, some emerging entrepreneurial forms of sustainable banking which were not included in the Yearbook were also examined, for example, Triodos Bank, ASN Bank, and Grameen Bank (Yunus et al., 2010).

2. The current sustainable banking practices were categorized against the original sustainable business model archetypes. The qualified examples were chosen by using the selection criteria, i.e. innovations that generate environmental and/or social benefits in business operations. Some observed examples were relatively radical for the banking industry as a whole. For example, Triodos Bank is only doing business with sustainable companies. Furthermore, avoiding over-selling as an example of "Encourage sufficiency" would go against conventional sales practices and banking practices. Some are incremental and create clear immediate win-win situations, such as reducing paper usage, which would also cut cost, as an example of "maximize material and energy efficiency". All examples were evaluated against whether they could fit the original archetypes or whether a new archetype is needed to accommodate them. Based on this, a revised set of archetypes is developed by partly using or modifying the original archetypes and partly by setting up new archetypes. The archetypes should represent underlying mechanisms of transformation in business model innovation; they should be clear and intuitive, mutually exclusive and explanatory, but not overly prescriptive (Bocken et al., 2014).

3. The last step was to conduct semi-structured interviews (in person or telephone) with 15 bankers in Hong Kong from different banks and different functions (Table 2) by convenience sampling. The reason for choosing banking practitioners as interviewees is that the sustainable business models are mainly practice driven and little academic research was available, so it was more appropriate and relevant to get insights from those working in banking industry. They were invited to comment on and validate the revised set of archetypes. The purpose was to, on best effort basis, find out the most up-to-date market practice, if any, until saturation, i.e. no new theme emerges. In the interviews, data saturation was reached at the 7th interviewee, because similar responses were received. However, multiple interviews had been planned to include different perspectives. As such, the 15 invited interviewees were deemed sufficient.

Some interviews were conducted in person if the interviewees were available; if not these were conducted by phone. Each interview lasted 40—60 min, starting with the objectives of this research, followed by explaining the concept of sustainable business models in banking and elaborating on the meaning of each of the archetypes. Since the concept of sustainable business models in banking was new to most interviewees, each of the archetypes was explained in detail according to the new definitions developed in this paper (see Appendix B for full definitions). Notes were taken during the interviews but no recording was made in order to not create a barrier between the interviewer and interviewee and allow them to talk freely. Transcribed interviews were shared with the interviewees within 2—3 days after the interview to verify completeness and correct interpretation. Verification was done through a follow-up phone call.

3.2. Research method to assess customer traction

The second part of the research method was quantitative. The following questions were investigated: Which archetype(s) would receive the best customer traction? Which archetype(s) would enhance customers' loyalty and purchase intention?

To investigate this and make the topic researchable within the limits of time and resources, Hong Kong retail banking customers were selected for a survey. Retail banking customers (i.e., personal banking) were selected, because they would provide a 'non-expert' consumer perspective on the banking industry. A practical consideration was that retail banking customers are more
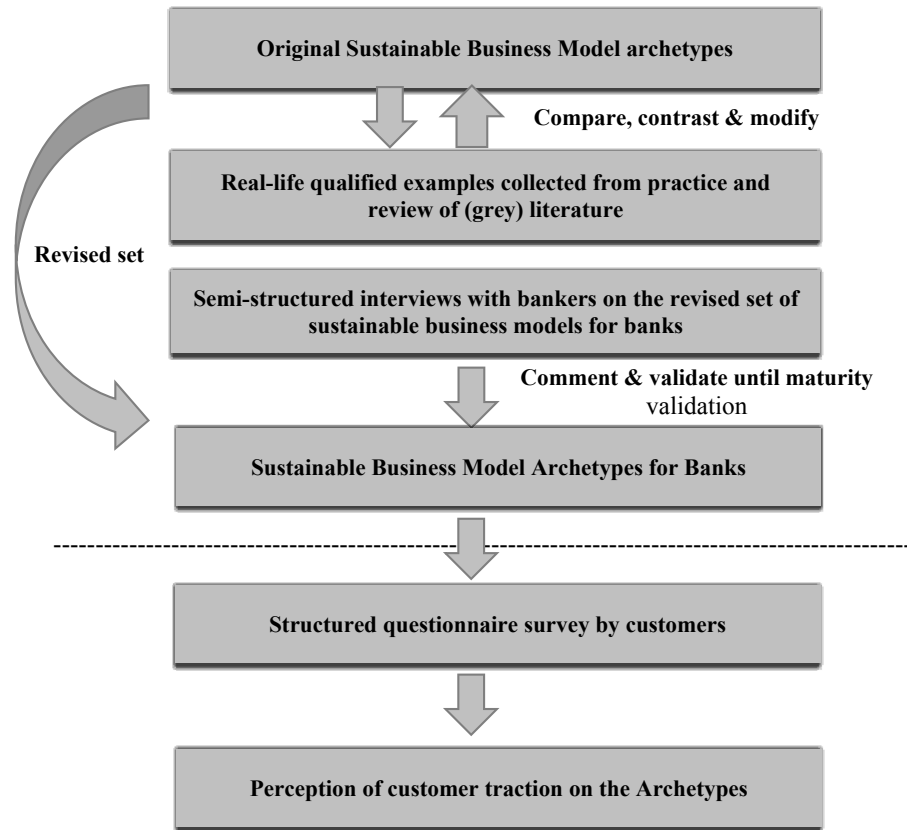
Fig. 1. Overall methodology of the development of the sustainable business model archetypes for banks and the assessment of their impact on customer traction.

Table 2
Details of the 15 bankers selected for semi-structured interviews.

Bank Name	Department	Job Title	Length and type of interview
HSBC	Sustainability	Manager	About 50 min on the phone
Standard Chartered	Private Banking	Senior Relationship Manager	About 45 min in-person interview
Llodys	Sustainability	Manager	About 1 h on the phone
Bank of China, Hong Kong	Corporate Banking	Operational Support	About 40 min in-person interview
OCBC Wing Hang	Corporate Banking	Relationship Manager	About 40 min in-person interview
DZ	Risk Management	Vice President	About 45 min in-person interview
China Citic Bank International	Retail Banking	Branch Manager	About 45 min in-person interview
Deutsche Bank	Anti-fraud	Vice President	About 45 min in-person interview
Bank of Tokyo-Mitsubishi UFJ	Operations	Head	About 40 min on the phone
Citibank	Special Assets	Senior Vice President	About 40 min on the phone
ANZ	Private Banking	Senior Relationship Manager	About 35 min on the phone
UBS	Private Banking	Director	About 40 min on the phone
Credit Agricole	Project Finance	Senior Vice President	About 1 h in-person interview
Bank of East Asia	Securities & Futures	General Manager	About 1 h in-person interview
Rabobank	Corporate Banking	Senior Relationship Manager	About 40 min in-person interview

accessible for collecting data than corporate banking customers. In addition, a greater number of respondents from retail banking customers could be attained for better statistical significance.

A structured survey was adopted because of speed and simplicity. To increase response rates, the survey was designed to take less than 10 min to complete. The online survey consisting two questions for each archetype aims to find out the customers' preference for the archetypes and their impact on their purchase intention. The two questions in the survey questionnaire (translated to English) are as follows:

Q1 **Assume that a bank adopts (Archetype X), how attractive does it sound to you? (7-point scale)**

Q2 **Assume your main bank adopts this Archetype, how does it impact your preference for this bank when you have additional banking service needs? (5-point scale)**

The required Likert scales used in these two questions were created for this research for simplicity and ease of answering when considering a multitude of future options from a customer perspective. Questions were thus developed based on simple language, which are unambiguous and easily understandable (Meadows, 2003) in the Hong Kong context. Questions were pilot-tested with two native speakers. Q1 focused on attitudes and Q2 on purchase intentions, which are not always the same for customers (Ajzen, 1991). Having a positive attitude does not necessarily induce

purchase intention, and purchase intention does not result in actual purchase. A 7-point Likert scale was used for Q1 because it gives people more choices to give nuance about their attitudes towards the different archetypes. Attractiveness was used a subjective term to understand the positive attitudes towards a business model innovation. In contrast, Q2 focused on "purchase intention". The less dispersed 5-point scale was used for purchase intention, because it was considered sufficient to describe a more action-oriented intention, requiring fewer nuances. "Repatronage intentions" (i.e. purchase intention) was selected for measuring loyalty because it directly links to profitability (Söderlund, 2006; Bayraktar et al., 2012). The rationale of the design was based on consumer research practice on closed-end questions. The scales were presented in Chinese to overcome language barriers. Similar to the questions, the scales were also validated by two native speakers to ensure they were appropriate to express their opinions.

Questions 1 and 2 were repeated for each of the eight archetypes (i.e. 16 questions, 8 pairs). In order to lower the sequential bias in questioning, these 8 pairs were shown to the respondents on a random basis. The meaning and examples were provided for each archetype before asking these two questions.

The survey questionnaire (Appendix C) was sent via email to retail banking customers in Hong Kong. This online survey was open to the general public aged 18 to 64 in Hong Kong. A total of 1586 people were randomly selected and invited for the survey, and 300 responses were received (response rate 19%). Table 3 includes the demographics of the respondents. The gender and age percentages were calculated from the Hong Kong population figures according to Hong Kong Census 2014. The sample was selected to represent the Hong Kong population actively using banking services.

3.2.1. Significance of the result per archetype in Q1 and Q2

Z-tests were conducted to find out whether each of the archetypes is attractive to the customer (Q1) and whether it would affect their preference for a bank (Q2) (95% confidence level).

3.2.2. Significance of cross-comparison of each archetype in Q1 and Q2

Secondly, a cross-archetype comparison was conducted by using one-way repeated ANOVA to find out 'favourite archetype(s)' for the retail banking customers (Q1) and the most influential archetype(s) for their loyalty (Q2). Mauchly's test was conducted to validate the repeated ANOVA by testing whether the data have violated the assumption of sphericity, i.e. whether the variances of the differences between conditions were equal. For the scores, which were close to each other, the Tukey test was used as a post hoc test to compare the multiple archetypes to find out the most preferred one(s).

4. Results

4.1. Results for sustainable business model archetypes for banks

After reviewing the grey literature and the iterative process with the selected bankers (semi-structured interviews) a revised set of

archetypes was developed for further comment and validation (Table 4). An example of coding of examples to develop the revised set can be found in Appendix D.

During the interviews, all interviewees agreed that the archetypes and examples generated from the grey literature could have triple bottom line benefits, in the short or long term. It is noticeable that no new archetype was proposed by the interviewees; not even by the two interviewees who are specialists in sustainability departments. A few of the original archetypes (Bocken et al., 2014) were found to be less applicable. Others needed modification.

The following were found to be less applicable:

- **"Create value from waste"** - because no significant amounts of waste are produced in the process of *delivering* banking service, especially when the consumption of paper is cut down by digitalization. Unlike the manufacturing industry where waste streams may be significant and are easily observable and traceable. In the banking industry, paper waste may be the major one, but it was not perceived to be sufficiently significant and a core part of the business to make commercial value out of them through business model innovation.

  "Deliver functionality rather than ownership" - no physical products are sold by banks; hence ownership of physical products is not relevant. In addition, shared usage is complex, because the banking service is personal and confidential.

The following needed modification:

- **"Substitute with renewables and natural process"** needs modification to reflect the nature of service. Since one of the distinctive characteristics of the service industry is "inseparability" (Kotler, 1991), where service delivery combines the process and the customers, while the process of production and the customers are separable in manufacturing. Therefore "Substitute with digital processes" is used to emphasize the linkage between the process and the customers in delivering value. Digital processes would replace traditional paper-intensive banking services.
- **"Develop scale up solutions"**

Scaling up is important and can be achieved by providing sustainable financial products in the banking industry. The name of this archetype was changed to "Sustainable financial products" to reflect this. An example of this is sustainable investment funds, which allow customers to participate and widen the funding source. Crowdfunding could fit in here as a growing and sustainable scale-up model for financing. However, from this research it emerges that currently banks are not ready to do this yet, although they could have important intermediary roles.

In the following section, each of the eight archetypes is discussed in detail in light of the grey literature and the semi-structured interviews with the bankers. The value-based analysis of each archetype is included in Table 5.

Archetype 1: Maximize material and energy efficiency (Technological)

Definition: Do more with fewer resources, generating less waste, emissions and pollution (Bocken et al., 2014)

Driver: This model centres on optimising resources use and targets for zero waste as a driver for sustainable business model innovation.

Examples of supporting innovations: digitalization of internal documents, electronic writing pads for transactions, e-learning, tele-conferencing and double-sided printing.

Why was it selected as an archetype?

Table 3
Sample demographics. Note. The number in brackets refers to the total number of responses in each category.

Age	Male	Female
18—29	10% (30)	11% (33)
30—44	14% (42)	20% (60)
45—64	21% (63)	24% (72)

Table 4
The sustainable business model archetypes for banks.

Technological	1. Maximize material and energy efficiency
	2. **Substitute with digital processes (modified)**
Social	3. Encourage sufficiency
	4. Adopt a stewardship role
	5. **Inclusive value creation (new)**
Organisational	6. Repurpose for society/environment
	7. **Resilience in loan granting (new)**
	8. **Sustainable financial products (new)**

Note. Includes revised items compared to the archetypes on Bocken et al. (2014) as highlighted in bold.

Although banks are considered to have a relatively low environmental impact per product unit, considerable volumes make the total significant (Jeucken, 2004). In the banking sector, paper usage is impactful to the environment, which is mainly due to the large consumption of paper used in various document files, e.g. credit files, customer information, etc. In addition, banking operation occupies office space and it leads to the consumption of water, energy and cooling agent for computer servers. This archetype aims to reduce extraction of natural resources and this in turn leads to less landfill and carbon dioxide emission. Through streamlining the internal process by digitalization, office space can be reduced. In the semi-structured interviews, many bankers said that it is a must do, and some even think that this archetype is very effective in environmental protection because it is visible in their daily workplaces.

This archetype is distinct from mere process innovation, which just reduces paper consumption in a particular operation. It should run through the entire bank and finally enhance the value proposition, e.g. a zero-paper operation as a bank-wide policy, which leads to significant cost saving. Sustainability adds the value of promoting a bank-wide reform rather than a piece-meal saving in some particular aspects. The rebound effect (Herring et al., 2009) is not so relevant because this archetype is more related to internal process of banks. However, social sustainability issues, e.g. unemployment, due to enhanced productivity, could be a problem (Ashford et al., 2012). Therefore, other sustainable business model archetypes concerning society, such as "Adopt a stewardship role", might be a complementary solution.

Archetype 2: Substitute with digital processes (Technological)

Definition: Reduce environmental impacts and increase business resilience by using digital channels to deliver services.

Driver: This model focuses on the service delivery innovation by using electronic means to minimize physical contacts and hence to reduce environmental impacts and increase business resilience.

Examples of supporting innovations: Internet trading platforms, digital branches, e-statements, robo-advisor (the "Merrill Edge Guided Investing" launched by Bank of America), and mobile payment.

Why was it selected as an archetype?

Banking is a service industry and its products are intangible. The delivery process is inseparable with people, and paper is a major medium for the communication in daily banking transactions. Utilising digital banking will result in reduction in paper usage and face-to-face contact between staff members and customers. This also reduces operating space, which can further reduce carbon emissions and costs. Digitalization is a business model innovation in banking because it changes the traditional 'brick-and-mortar' mode of contact. Simultaneously, while digitalization becomes a bank-wide policy, which may have a very positive impact on

environmental and social aspects, this can be viewed as a sustainable business model having dual objectives: saving costs and promoting sustainability. It differs from archetype 1, which focuses on the internal operation process of banks, as this archetype applies to the mode of service delivery.

This archetype is particularly beneficial to the transactional banking business, which is a deal-based business that banks offer to support their clients financially in reciprocal exchanges of goods, cash or securities. For example, the securities department deals with many trading transactions every day and daily statements are sent to customers. One interviewed banker estimated that e-statement practice saves around 5% of total operating costs by reducing cost of postage, paper, and labor for example. On the other hand, the ease of transacting encourages customers to purchase more frequently through digital banking. Digital banking could be a good alternative for banks in less developed countries to provide banking services to the poor because it overcomes the underdeveloped infrastructure and the cost of travelling. Last but not least, this archetype is different from mainstream banking as it intends to create a totally digitalized transaction platform for customers and ultimately replaces branch network by 'fintech' (financial technology).

Archetype 3: Encourage sufficiency (Social)

Definition: Solutions that actively seek to reduce utilisation of banking products or service.

Driver: This model focuses on solutions that actively seek to reduce consumption and avoid over-provision of services in order to reduce reputational risk and increase customer loyalty.

Examples of supporting innovations: Incentivising sales staff by need-based selling, adopting "compliance" as a key performance indicator for sales staff's appraisal, promoting sensible borrowing, matching suitable products against customer's risk profile, and raising the fixed salary portion while lowering the sales commission portion (HSBC Hong Kong Branch).

Why was it selected as an archetype?

Overselling loans and investment products could be disastrous to banks because it sometimes involves mis-selling. The costs include heavy financial penalties imposed by regulatory bodies and detrimental impact on a bank's image (brand) and customer relationship. Overselling of investment products could become a social problem if it involves mis-selling that makes lots of customers suffer from financial loss during the downturn of economic cycle. Currently, especially after the financial crisis in 2008, building trust seems to be the objective of most banks, encouraging sufficiency via need-based selling helps banks to rebuild the image. This archetype spans across various business segments and becomes a new sales culture and, more accurately, a right way to do business.

More and more banks are changing the reward system from volume-based to a need-based method. All interviewed private bankers said that the customers' need is central rather than pushing particular products. Key Performance Indicators (KPIs) including measurement of customers' need and satisfaction are used. More and more banks are changing the remuneration package of sales staff that fixed salary portion is enlarged while the variable portion is lowered. However, one banker raised the concern of the drop of business after the new reward system was implemented.

Archetype 4: Adopt a stewardship role (Social)

Definition: Proactively engaging with all stakeholders to ensure their long-term health and well-being (Bocken et al., 2014).

Driver: This model centres around giving positive impact on environment and society for increasing brand equity that leads to a longer term mutual benefits to both the banks and the customers.

Table 5
Value analysis of the eight financial sustainable business model archetypes.

Archetype	Value proposition	Value creation & delivery	Value capture	Difference from mainstream banking business model
1. Maximize material and energy efficiency	Services that use fewer resources, generating less waste and emissions than the services that deliver similar functionality.	Focus is on the *internal operational process innovation*.	Costs are reduced through increased operational efficiency leading to increased profits.	Banks intend to implement a bank-wide strategy to maximize material and energy efficiency instead of a piece-meal approach.
2. Substitute with digital processes	Reduce environmental impacts and increase business resilience in terms of speed, convenience, cost and accuracy by using electronic means in service delivery process	*Innovation in service delivery design* (e.g. delivery channels) enhances the speed, convenience, cost and accuracy of service delivery to customers.	Revenue is enhanced by providing customers more convenience, which may result in more frequent transactions. Cost saving is achieved by reducing manpower and related expenses.	Banks keep innovating with digital processes for customer contact with a target to minimize or eliminate traditional branch network by fintech.
3. Encourage sufficiency	Solutions that seek to reduce demand (which was generally inflated before) by correct assessment of customer needs and reducing mis-selling of financial products and moral hazard in lending. *The focus is on the customer relationship and reward system.*	This may involve changing the frontline sales staff's remuneration to a higher portion of fixed salary, promoting need-based selling by correct matching of products and advocating sensible borrowing.	Customer satisfaction and loyalty may increased that may lead to more business. Compliance risk is lowered and reduces the chance of penalties by regulators. Societal benefit is captured: customers get what they really need in the right quantity and quality.	Banks give up the approach of "selling more" by replacing it with premier services/ products to match the exact needs of customers.
4. Adopt a stewardship role	Provision of services intended to genuinely and proactively engage with stakeholders to ensure their long-term well-being. Broader benefits to stakeholders often become an important aspect of the values proposition by engaging customers better.	Ensuring activities and partners are *focused on delivering stakeholders' well-being*. The value chain is ensured to deliver environmental or social benefits.	Stewardship strategies can generate brand value, potential cost savings and secure future business. Stakeholders' well-being generates long-term business benefits. For example, healthy and happy staff may claim less sick days and be more productive.	In addition to the traditional CSR activities, banks tend to adopt a shared value approach to leverage and benefit their core business, e.g. re-employ their retired staff on part-time basis.
5. Inclusive value creation	Inclusive value is created through product and service innovations that serve previously un-served markets or high-risk customers.	*Process innovation* is the key to reduce the risks associated, for example, using credit scoring and portfolio management methods to manage the risks in SME lending.	Increase of market share. More business opportunities may be secured by customer loyalty when customers become more profitable in the future. Societal benefit is also captured.	Banks help themselves by helping the disadvantaged who may become their loyal customers in the long run. Moreover, it means more business in short run if the risk manageable.
6. Repurpose for society/environment	Creating societal benefits and environmental benefits through specializing in providing banking services that match the needs of the customers.	Banks are using sustainability as a criterion for selecting customers; being an expert in providing banking services to this particular segment and achieving economies of scale.	Only provide banking services to sustainable companies and the disadvantaged, including "positive screening" against social and environmental benchmarks.	Banks segment its business more accurately on sustainable businesses only, not just using the current negative screening approach.
7. Resilience in loan granting	Use *loan approval process innovation* with sustainability criteria to screen out unsustainable business (i.e. negative screening).	As the sustainability risk is lowered, the cost of capital and the potential bad debt could be reduced.	Lending to customers with no/ minor sustainability risk. This can directly reduce financial resources to companies with adverse sustainability impacts.	Banks use a more comprehensive system to screen out unsustainable borrowers in every aspect including commercial and personal customers.
8. Sustainable financial products	Asset-side and liability-side products are created for savers/ investors and borrowers respectively	Product innovation opens up new markets in sustainable finance and supports sustainable development.	*Product innovation* enables participation in sustainability, which may provide a platform for both savers and borrowers to pursue financial return in sustainable business.	Banks focus on the new market demand on sustainable businesses by providing customers with new financial platforms.

Examples of supporting innovations: internship opportunities for students, supporting social enterprises, re-employing retired staff on contract basis, employ physically disabled persons, and encouraging staff to do volunteer work by giving paid leave.

Why was it selected as an archetype?

The brand and credibility of banks are crucial to the industry as banking is an industry of confidence. Banks are actively seeking to contribute to the wellbeing of their value networks. Hence, this archetype contributes partially towards the systemic objective to create a flourishing society and planet. The positive societal and environmental impacts are helpful for a "license" to operate because banking is a highly regulated business.

In the interviews, it was found that "adopt a stewardship role" is the most common and traditional CSR activity, and a trend is seen that more and more banks tend to use this archetype not only for branding purpose, but also for enhancing staff morale and team spirit. The ultimate goal is to implant the concept of "doing well and doing good" in employees' mindset that makes the bank a good corporate citizen. This is distinct from just using charity works as a window-dressing for sustainability reports. This archetype may benefit from a combination with other archetypes, for instance, "inclusive value creation".

Archetype 5: Inclusive value creation (Social)

Definition: Provide and/or improve access to financial products and services for meeting diverse needs.

Driver: This model focuses on social concern by providing innovative banking products and services to the underserved, vulnerable or traditionally less/non-bankable customers.

Examples of supporting innovations: supporting first-time home buyers, reducing fees for NGOs, restructuring loans for customers facing financial difficulty, granting unsecured loans to SMEs, and being more inclusive to LGBT (Lesbian, Gay, Bisexual and Transgender) (e.g., HSBC's "PRIDE" support), and banking services for underserved markets (e.g. M-Pesa branchless banking service; see Batchelor, 2012). DBS Bank launched a Social Enterprise Special Package offering social enterprises preferential rates on business loans and unsecured overdrafts, and fee waivers for certain services.

Why was it selected as an archetype?

This archetype promotes banks to rethink its core business strategy to be more inclusive when it comes to lending to the less bankable customers. The risk could be reduced by innovative business processes. For instance, unsecured lending to small and medium sized enterprises (SME) is possible by using credit score-cards and portfolio management, and the excessive risk is finally offset by charging higher interest margin paid by a large number of SMEs. Another prominent example is to support social innovation; in addition to giving loans to social enterprises, banks also provide business know-how to social entrepreneurs that lowers the risk of lending. One banker said that this archetype is a perfect blend with the archetype "Adopt a stewardship role" because it serves two purposes, helping the needy in society and tapping into new markets, which may lead to shorter-term financial return. The long-term success of this archetype may rely on the expansion to new markets through inclusion, and it is foreseen that more and more banks will follow if the risk is effectively contained with reasonable profit. This archetype is different from "adopt a stewardship role", as "inclusive value creation" predominantly targets potential or existing customers, while "adopt a stewardship role" can benefit anyone.

Archetype 6: Repurpose for society/environment (Organisational)

Definition: Prioritising delivery of social and environmental benefits rather than economic profit maximisation, through close integration between the firm and local communities and other stakeholder groups (Bocken et al., 2014).

Driver: This model centres on prioritising delivery of social and environmental benefits that could be a new market with lower risk.

Examples of supporting innovations: Triodos Bank, ASN Bank and Grameen Bank are applying this archetype with a specific sustainability mission. A rural bank as a wholly-owned subsidiary of a major bank to support farmers (e.g., Rural Bank Limited, a wholly owned subsidiary of Bendigo and Adelaide Bank Ltd.) is another example.

Why was it selected as an archetype?

This is a distinct sustainable business model archetype as it is a shift of the focus of traditional business from maximising shareholder value to social/environmental value. Banks adopting this archetype only do business with the customers having positive impact to the environment or society. This archetype adopts a positive screening for providing banking services only to sustainable companies which benefit society/environment. On a system level, it changes the fundamental purpose of businesses to deliver environmental and societal benefits. However, the traditional banks hardly adopt this archetype in full. One banker commented that this model is too risky and may need long time to see the results. Therefore, a "hybrid model" is more common and viable that traditional banking model and "repurpose for society/environment" model co-exist. For example, HSBC Rural Bank is a wholly-owned subsidiary of HSBC; it focuses on aiming at helping farmers through tailored made banking services. A hybrid model is more appropriate for banks to start off because the traditional business model can subsidize the new one at least in early stage until the "repurpose for society/environment" model becomes financially independent.

Archetype 7: Resilience in loan granting (Organisational)

Definition: Lending criteria that seek to screen out borrowers with negative impact to environment and/or society.

Driver: This model focuses on risk management that a bank-wide loan approval criteria to borrowers with no/minor negative impact to environment and/or society.

Examples of supporting innovations: application of the Equator Principles for project financing, environment and social assessment guideline for lending, setting up an independent sustainability risk committee for credit approval, and OECD countries adopting the "Sustainable Lending Practices in the Provision of Official Export Credits to Low Income Countries" (OECD, 2008).

Why was it selected as an archetype?

According to Jeucken (2010), environmental risks may include 1) The financial risks associated with the client's continuity problems caused by environmental legislation or changing market conditions; 2) direct liability for environmental damage made by its borrowing clients; and 3) reputation risk and negative publicity from environmental issues. From a risk management point of view, this archetype safeguards banks from the direct impact on profit and loss accounts by lowering cost of capital and reducing reputational risk. The indirect impact is on the credit side, in which a stringent pre-lending assessment lowers the environmental and social risks faced by the borrowers. Most international banks have general assessment guidelines with specific industry policies. They also have sustainable risk managers, reputational teams, etc. To participate in the approval process and may have a veto on decision making.

Archetype 8: Sustainable financial products (Organisational)

Definition: Scaling up through sustainable financial products, which allow more customers to participate in the economic return

of sustainability.

Driver: This model centres on the product innovation for more customers to participate in the potential growth opportunities of sustainable businesses. The target customers include charities, sovereign investors and the customers who are sustainability-conscious, etc.

Examples of supporting innovations: green bonds, sustainable mutual funds, socially responsible funds, impact investing for clients (Bocken, 2016), supporting crowdfunding and sustainable shipment letter of credit.

Why was it selected as an archetype?

There is a growing trend that the investors, savers and governments are more concerned about sustainability issues. The quest for sustainable development and related legislation pose opportunities for banks to capture these new financing markets for both savers and borrowers. Scaling up is possible by supporting crowdfunding and selling new funds with innovative themes like impacting investment. "This is a new market with lower risk premium", commented a banker in a sustainability department. This archetype is different from a single product innovation; it is a kind of financial innovation directly related to sustainability and can be termed a "blue ocean strategy" (Kim and Mauborgne, 2005) in the banking field because it creates a new space for business growth.

4.1.1. The significance of the result per archetype

Q1. Assume that a bank adopts (Archetype X), how attractive does it sound to you? (7-point scale)

Table 6 includes the results for archetype attractiveness, which shows a significant positive result for each of the archetypes (most positive in bold).

Q2 Assume your main bank adopts this Archetype, how does it impact your preference for this bank when you have additional banking service needs? (5-point scale)

Table 7 includes the results for purchase intention in relation to the archetypes, which shows a significant positive result for each of the archetypes (most positive in bold).

Key observations

From the z-test results in Tables 6 and 7, all archetypes score higher than the means, i.e. 4 on a 7-point scale and 3 on a 5-point scale and have P-values very close to zero, which means that the general perception is positive towards all the archetypes in terms of attractiveness and purchase intention. From the mean score results, the top three (i.e., best-ranked) archetypes in both questions are the same, in sequence: Archetype 4 "Adopt stewardship role", Archetype 2 "Substitute with digital process" and Archetype 3 "Encourage sufficiency".

4.1.2. Finding the highest ranked archetype(s) by cross-comparison of each of the eight archetypes

Q1. Assume that a bank adopts (Archetype X), how attractive does it sound to you? (7-point scale)

The result for Mauchly's test for Q1 shows a p-value very close to zero, which means that the ANOVA result can be trusted (Appendix E).

Post hoc test

Since the means of all archetypes are so close to 4 on a 7-point scale, and in order to find out the pairwise differences between the archetypes and explore which archetype is the most preferred one(s), the Tukey test is used. From Appendix F, the results with asterisk have a significant meaning. Table 8 summarises the results.

Key observations

1. The mean for archetype 4 is significantly higher than the means for archetypes 1, 5, 6, 7 and 8

2. The means for archetypes 2 and 3 are significantly higher than those of Archetypes 5, 6,7 and 8.
3. There is no significant difference between the top three archetypes, i.e. archetypes 2, 3 and 4.

Q2 Assume your main bank adopts this Archetype, how does it impact your preference for this bank when you have additional banking service needs? (5-point scale)

The result for Mauchly's test for Q2 shows a p-value very close to zero, which means that the ANOVA result can be trusted (Appendix E).

Post hoc test

Since the means of all archetypes are so close to 3 on a 5-point scale, and in order to find out the pairwise differences between the archetypes and explore which archetype is the most preferred one(s), the Tukey test is used. From Appendix F, the results with asterisk have significant meaning. The following matrix (Table 9) summarises the results.

Key observations

1. The means for archetypes 2 and 4 are significantly higher than those of archetypes 1, 5, 6, 7 and 8
2. The mean of archetype 3 is significantly higher than those of Archetypes 5, 6 and 7.
3. There is no significant difference between the top three archetypes, i.e. archetypes 2, 3 and 4.

General Interpretation

For the general retail banking customers in Hong Kong, the sustainable business models, **Archetype 4 "Adopt a stewardship role"** is the most appealing one followed by **Archetype 2 "Substitute with digital processes"** and **Archetype 3 "Encourage sufficiency"**. On the other hand, **Archetype 2 "Substitute with digital processes"** and **Archetype 4 "Adopt a stewardship role"** are the most influential ones to induce greater bank preference followed by **Archetype 3 "Encourage sufficiency"**. No significant difference was found among these top three archetypes 2, 3 and 4.

The mean scores of Archetype 6 **"Repurpose for society/environment"** and Archetype 7 **"Resilience in loan granting"** are ranked the lowest in both the "attractiveness" and "purchase intention" questions in the survey.

5. Discussion and conclusion

This section discusses the results in light of the literature and suggests future research directions in the field of sustainable business models in the banking industry. The key contribution is a new set of archetypes articulated for the banking industry that facilitates further innovation and systematic analysis of sustainable banking practices. Second a methodology was formalized which can be repeated for categorizing sustainable business model archetypes in different industries. Finally, the findings of customer traction related to the archetypes help Hong Kong banks to focus on the most welcomed archetypes for achieving doing good and doing well.

5.1. The revised set of archetypes for banks and its implications

The growing significance of services (Sheehan, 2006) indicates the importance of re-assessing their business models. This paper looked into banks as an essential service provider to finance a sustainable economy (Alexander, 2014).

The methodology used in Bocken et al. (2014), which was largely based on the manufacturing industry, was found to be a useful starting-point to redevelop the framework for the banking

Table 6
Attractiveness of the Archetypes (7-point scale; n = 300).

Archetype	Mean score	SD	Mean score - 4	z-score	Significance (p-value)
Archetype 1 - Maximize material and energy efficiency	4.903	1.202	0.903	13.012	<0.00001*
Archetype 2 - Substitute with digital processes	**4.97**	**1.189**	**0.97**	**14.13027**	**< 0.00001***
Archetype 3 - Encourage sufficiency	**4.963**	**1.166**	**0.963**	**14.30502**	**< 0.00001***
Archetype 4 - Adopt stewardship role	**5.083**	**1.184**	**1.083**	**15.843**	**< 0.00001***
Archetype 5 - Inclusive value creation	4.737	1.131	0.737	11.28666	<0.00001*
Archetype 6 - Repurpose for society/environment	4.613	1.147	0.613	9.256732	<0.00001*
Archetype 7 - Resilience in loan granting	4.7	1.129	0.7	10.73902	<0.00001*
Archetype 8 - Sustainable financial products	4.83	0.992	0.83	14.49196	<0.00001*

Note. * refers to significant results.
Note. Most positive results in bold.

Table 7
Purchase intention for the Archetypes (5-point scale; n = 300).

Archetype	Mean score	SD	Mean score - 3	z-score	Significance (p-value)
Archetype 1 - Maximize material and energy efficiency	3.33	0.9	0.33	6.350853	<0.00001*
Archetype 2 - Substitute with digital processes	3.473	0.905	0.473	9.052597	<0.00001*
Archetype 3 - Encourage sufficiency	3.42	0.89	0.42	8.173723	<0.00001*
Archetype 4 - Adopt stewardship role	3.493	0.867	0.493	9.848916	<0.00001*
Archetype 5 - Inclusive value creation	3.307	0.869	0.307	6.118983	<0.00001*
Archetype 6 - Repurpose for society/environment	3.147	0.91	0.147	2.797928	0.002572*
Archetype 7 - Resilience in loan granting	3.133	0.908	0.133	2.537035	0.00559*
Archetype 8 - Sustainable financial products	3.33	0.814	0.33	7.021828	<0.00001*

Note. * refers to significant results.

Table 8
Cross-comparison of the archetypes in terms of "Attractiveness".

	A1	A2	A3	A4	A5	A6	A7	A8
A1		▨	▨	—	+	+	+	▨
A2	▨		▨	▨	+	+	+	+
A3	▨	▨		▨	+	+	+	+
A4	+	▨	▨		+	+	+	+
A5	—	—	—	—		▨	▨	▨
A6	—	—	—	—	▨		▨	—
A7	—	—	—	—	▨	▨		—
A8	▨	—	—	—	▨	+	+	

Note:

"+" means the vertical archetype is significantly higher than horizontal one.

"—" means vertical archetype is significantly lower than horizontal one.

Cells with shadow mean the results are not significant statistically.

Table 9
Cross-comparison of the archetypes in terms of "Purchase intention".

	A1	A2	A3	A4	A5	A6	A7	A8
A1		—		—		+	+	
A2	+				+	+	+	+
A3					+	+	+	
A4	+				+	+	+	+
A5		—	—	—		+	+	
A6	—	—	—	—	—			—
A7	—	—	—	—	—			—
A8		—		—		+	+	

Note:

"+" means the vertical archetype is significantly higher than horizontal one.

"—" means vertical archetype is significantly lower than horizontal one.

Cells with shadow mean the results are not significant in statistically.

industry. Using this framework and adopting a similar research method, the original eight archetypes were adapted for banking. This paper tested how the sustainable business models used by banks could fit into the framework; and see whether there is a need for revised archetype(s). The different nature of the service industry where direct customer contact is key and value is created by a range of activities involving a number of stakeholders (Gummesson, 2008) plays an important role in adapting the original archetypes. Since the main value creation is through provision of service, the intangibility and inseparability of banking as a service leads to inapplicability of some of the original archetypes of Bocken et al. (2014). As a result, some were modified to make them suitable for the banking industry, based on the industry's specific characteristics.

The overall result shows that one set of archetypes may not be sufficiently comprehensive to accommodate unique operations of different industries or sectors, because some archetypes were highly specific to banking (e.g. Resilience in loan granting). This is

crucial when it comes to one of the major objectives for developing sustainable business model archetypes − helping companies to inspire and facilitate the innovation process for sustainable business models in the future. It is suggested that further re-development is necessary to develop a categorization for the service industry as a whole or develop categorisations for specific sectors (e.g. types of services). Moreover, it is suggested that the process of developing new business model archetypes is highly iterative, which needs development over time. To conclude, the original research (Bocken et al., 2014) gave a rigorous theoretical foundation and repeatable methodology to distinguish and classify sustainable business models for different industries in the future.

5.2. Relationship between sustainable banking model archetypes and customer traction

The second research question explored how the archetypes are perceived by retail banking customers in Hong Kong and how they

affect purchase intention.

In sequence Archetype 4 "Adopt a stewardship role", Archetype 2 "Substitute with digital processes" and Archetype 3 "Encourage sufficiency" were ranked highest having the most positive influence on both the perceived attractiveness and purchase intention. The reasons why Archetypes 2 and 4 are so outstanding may be due to the visibility and the immediacy nature of these two archetypes. The technological innovation gives retail banking customers greater convenience to access banking services; and most of the customers can see the impact of the programs organised by banks under "Adopt a stewardship role". "Encourage sufficiency" seems to play an important role in driving current customers' bank preference. This indicates that the need-based selling approach is appreciated by customers and that makes repeated purchase likely. However, "Encourage sufficiency" would be more difficult to pursue for established banks, being most radical, because this might need to forfeit short-term profit for longer-term benefits by building trusting relationship with customers. Nevertheless, a positive attitude (Q1 in this research) created through such innovation, may eventually positively influence purchase intentions (Q2) (see Ajzen, 1991).

In a nutshell, the Hong Kong customers appear to be most concerned with what is directly related to their own wellbeing. Triangulation by in-person interviews with the survey respondents would be beneficial as a next step to understand the full underlying reasons. However, the survey results show some initial attractiveness of the sustainable business model archetypes to be adopted by banks (archetypes 2, 3 and 4 in particular) indicating potential future directions for banks.

The overall result shows that the retail banking customers generally have positive perceptions about the sustainable business models used by banks. However, it is noticeable that archetype 6 "Repurpose for society/environment' ranked among the lowest ones in both the "attractiveness" and "purchase intention" questions in the survey. This result seems to match with the results of the semi-structured interviews that many bankers think this archetype is either not necessary or not practical to implement. Similarly, Archetype 7 "resilience in loan granting" as another potentially influential archetype, was also ranked relatively low by the customers. However, to transform the banking industry, also the more "difficult" archetypes will need to be dealt with.

5.3. Practical issues for implementing sustainable business models

From the semi-structured interviews with the bankers, two themes emerged. Firstly, the implementation of certain archetypes (e.g. "Encourage sufficiency") conflicts with short-term pressure from profit motives and targets. Some bankers pointed out that sales quota pressure may override the need-based selling guideline. One private banker said, "no short-term, no long-term", meaning that if she failed to meet the sales budget, she would be fired. Secondly, the promotion of sustainable financial products is insufficient, keeping the products 'on the shelf'. It is common that the financial return of those products is usually long-term in nature (in many cases, the bankers do not even know how the sustainable financial products perform). Also, the market segment is relatively small and niche, so the marketing expense may outweigh the potential sales return. It is a pity that the communication on sustainability within a bank and for the customers has been ineffective. Together with the deficiency in appraisal system to capture the performance in sustainable development, this eventually leads to unsatisfactory sustainable business practice.

The findings reflect that the road to real and scalable sustainable business models in banking is bumpy, similar to 'conventional' business model innovation (Chesbrough, 2010), and the hurdles are similar to those in other industries. One prominent and common hurdle is the "short termism" (see also Bocken, 2016). It is natural that most of the decision makers favour the immediate benefit; therefore, digitalization is the most scalable one because it saves cost in a calculable manner. The awareness of sustainability in customers may play a vital role in driving sustainable banking business models in the future because the degree of the awareness will have an impact on customer traction. To achieve that, apart from enhancing sustainability education to the public, communicating the models' contribution to sustainability is also crucial. Customers should be clearly informed of the benefits to sustainability and to themselves in the long run, which is a win-win-win result.

5.4. What constitutes a business model innovation?

The practice review in this paper generated an interesting range of financial archetypes (Tables 5 and 10). Because these were based on current sustainability practices in banking, some archetypes may look more like product/process innovations. What constitutes a business model innovation remains a tricky question. Business model innovation is a systems-oriented approach; not only process and product innovation (Laukkanen and Patala, 2014; Peric and Djurkin, 2014). The authors view business model innovation as a mindset change starting with (product/process) innovations that would serve as a catalyst for further innovation, which would eventually transform the organisational business model. The authors also recognise that innovative business models are the ultimate result of a deliberate and continuous process of embedding social and environmental benefit in regular profit-making activities. This was echoed by Lüdeke-Freund et al. (2016, p.29), "*Engaging in business model innovation is a deliberate decision. Companies can always opt for other forms of innovation, but under particular circumstances their choice should be the business model. Integrated ecological, social, and economic value creation is likely to require radically new business models.*"

Similar to the sustainable business model archetypes in Bocken et al. (2014) the examples given can be viewed as key innovations that drive sustainable business model innovation. In this research, some archetypes were found quite disruptive to the current business models and can be viewed as real business model innovation. For example, "encourage sufficiency" may raise the trust level with customers, which leads to higher loyalty and lower chance of misselling. Another example is "sustainable financial products", which includes selling green financial products and the support to the innovative financial platform such as crowdfunding.

5.5. Transition to sustainable banking

Sustainable banking is a global movement to transform the banking sector and develop new sustainable business models (Jeucken and Bouma, 1999; Jeucken, 2004, 2010). The innovation is usually disruptive and radical, for example, Grameen Bank provides microcredit to the poor (Yunus et al., 2010), which is typically higher in risk, and Triodos Bank's (not yet mainstream) ethical banking caters mainly for environmentally and socially conscious customers. M-Pesa, a branchless bank focusing on developing countries (Batchelor, 2012), has emerged as a banking alternative without the need for brick-and-mortar banks serving previously

Table 10
The sustainable business model archetypes for banks.

Groupings	Archetype	Examples of supporting innovations
Technical	Maximize material and energy efficiency	Digitalized internal documents, electronic writing pads, teleconferencing
	Substitute with digital processes	Online trading, e-banking, e-statements, robo-advisor, mobile payment.
Social	Encourage sufficiency	Need-based selling, promote sensible borrowing, lower the commission portion in sales staff remuneration, using "compliance" as a KPI
	Adopt a stewardship role	Re-employ retired staff, sponsor social enterprises, paid leave for volunteer work.
	Inclusive value creation	Support first-time home ownership, micro-financing, granting unsecured loans to SMEs, and being more inclusive to LGBT.
Organisational	Repurpose for society/ environment	Examples of banks pursuing this archetype: Triodos Bank, Grameen Bank
	Resilience in loan granting	- E&S (Environment and Social) Assessment by Standard Chartered (negative screening) - Equator Principles (mainly for project finance)
	Sustainable financial products	Green bonds, crowd-funding platform, socially responsible funds, impact investing for clients.

unserved markets. However, we do not yet see a radical shift in the Hong Kong banking industry analogous to the slow adoption of business model innovation in other established businesses and industries (Weissbrod and Bocken, 2017), but rather a gradual transition. Jeucken (2001) discussed the general reasons and these appear applicable to Hong Kong. Firstly, the major players in Hong Kong banking industry are sizable international banks, and they were not proactive in screening out unsustainable businesses in lending, because this required interference with a client's activities (Jeucken, 2001). Secondly, banks were relatively slow because they generally considered themselves to be a more environmental friendly industry (i.e., having low direct environmental impacts) and the pressure from activists was not severe (Jeucken, 2001). On the other hand, practicing sustainability may incur short-term costs and involve changes in ways of doing business; the priority was not very high in their business agenda. As per some of the feedbacks from our interviews, large banks may only start to radically innovate from a smaller scale as a pilot scheme to test "radical business models" because the risks are more contained, which echoes literature on business model experimentation (Chesbrough, 2010; Weissbrod and Bocken, 2017). However, technology, e.g. fintech and blockchain technology, the booming of crowdfunding and peer-to-peer lending, and the threat of fast-emerging start-ups may accelerate the innovation process in the banking industry as these may, to certain degree, facilitate disintermediation that threatens traditional banking business.

5.6. Limitations

This research has the following limitations. Firstly, the archetypes are developed through historical information and examples from practice review. As a result, it is difficult to predict new radical innovations (i.e. new archetypes). Some archetypes were viewed as "business as usual" by the interviewees (archetypes 2, 4 and 7). However, it is noted that archetype 3 "Encourage sufficiency" and archetype 8 "Sustainable financial products" are more novel and might be leading the industry to a more sustainable business direction. Secondly, the online survey was targeted at customers in Hong Kong. Though the results are to be relevant to developed countries, they may be affected by local culture and practice. For instance, Hong Kong may be more forward looking and positive towards sustainability, already being affected by the effects of 'unsustainability' such as air pollution. On the other hand, 'sustainable banking' may be more advanced in Europe, as there are banks such as Triodos Bank and ASN Bank in Netherlands solely focusing on sustainable businesses. Thirdly, this research focuses on

the banking industry that the results may not be relevant to other industries. Fourth, we developed our own scales for attractiveness and purchase intention to fit the purposes of this research and measure, which may be viewed as a limitation. Finally, for the interviews a convenience sampling method was used and all interviewees were middle to senior staff members, many of whom were not viewed as experts in the field of sustainability, which may limit their views. Therefore, interviewing scholars, activists and sustainable banking experts would complement the views.

5.7. Contributions and future research opportunities

This paper extends Bocken et al. (2014) sustainable business model archetypes to the banking industry. A new set of sustainable business model archetypes was developed for the banking industry and tested with customers. The methodology for developing archetypes for certain sectors was formalized further and could be used for industries. In future research, archetypes can be developed for an individual service industry or the service industry as a whole. It is also recognised that the work on new business models should be iterative and ongoing (Chesbrough, 2010; Weissbrod and Bocken, 2017) and there is space to explore further radical innovations that could help transform the industry and its image. It would be insightful to identify differences in perception and purchase intention of individual banks' own customer clusters. The practical hurdles in implementing the sustainable business models in banks is another important topic, because the industry is relatively conservative in its innovation approach, which was reflected from the interviews. Finally, assessing and measuring the real triple bottom line impact of the sustainable business models used by banks is another important but challenging research topic.

Acknowledgement

Appendixes

Appendix A. RobecoSAM sustainability yearbook 2015 - banking industry leader league table

Sustainability leaders 2015
RobecoSAM Gold Class
Westpac Banking Corp
RobecoSAM Silver Class
Australia & New Zealand Banking Group Ltd
RobecoSAM Bronze Class

Banco do Brasil SA	Commonwealth Bank of Australia
Banco Santander SA	National Australia Bank Ltd
Shinhan Financial Group Co Ltd	UniCredit SpA

Sustainability Yearbook Members

Banca Monte dei Paschi di Siena SpA	HSBC Holdings PLC
Banco Bilbao Vizcaya Argentaria SA	Intesa Sanpaolo SpA
Banco Bradesco SA	Itau Unibanco Holding SA
Banco Comercial Portugues SA	Itau Unibanco Holding SA
Bancolombia SA	Itausa - Investimentos Itau SA
Bank of Montreal	Lloyds Banking Group PLC
Bankia SA	Nedbank Group Ltd
Barclays PLC	Royal Bank of Canada
BNP Paribas SA	Royal Bank of Scotland Group PLC
CaixaBank SA	Skandinaviska Enskilda Banken AB
Canadian Imperial Bank of Commerce	Societe Generale SA
Citigroup Inc	Standard Chartered PLC
Danske Bank A/S	Swedbank AB
DNB ASA	Toronto-Dominion Bank
E.Sun Financial Holding Co Ltd	

Appendix B. Explanation and questions for semi-structured interviews

Appendix C. Part of questionnaire with Archetype 1 as an example

Archetype 1	Maximize material and energy efficiency
Meaning	Using more environmental friendly and energy efficient methods for operations
Examples	- Digitalized internal documents, - Electronic writing pads

Assume that a bank adopts (Archetype 1), how attractive does it sound to you? Please use a rating scale of 1–7, where 7 means "Very Attractive" and 1 means "Not attractive at all"

Not attractive at all		Neutral			Very attractive	
1	2	3	4	5	6	7

Assume your main bank adopts this Archetype, how does it impact your preference for this bank when you have additional banking service needs? (5-point scale)

This bank's archetype will definitely motivate me to choose this bank	5
This bank's archetype will very likely motivate me to choose this bank	4
This bank's archetype will somewhat likely motivate me to choose this bank	3
This bank's archetype will not be very likely to motivate me to choose this bank	2
This bank's archetype will be very unlikely to motivate me to choose this bank	1

	Archetype	Examples
Technical	1. Maximize material and energy efficiency	- Digitalized internal documents, electronic writing pads
	2. Substitute with digital processes	- Online trading, e-banking, ATM, mobile apps, Bank Payment - Obligation (BPO) – a fully automated trade processing system (by Standard Chartered)
Social	3. Encourage sufficiency	- Need-based selling, promote sensible borrowing, streamlining product range and assess value for money on wealth management products (by HSBC)
	4. Adopt a stewardship role	- Re-employ retired staff, sponsor social enterprises, accessible debit card for the blind and the deaf, no shark fin and endangered reef fish in corporate menu, requesting donation to charities in lieu of sending flowers.
	5. Inclusive value creation	- Support first-time home ownership, micro-financing, unsecured loans to SMEs, support customers in financial difficulty due to natural disasters.
Organisational	6. Repurpose for society/environment	- Only granting loans to sustainable companies, e.g. Triodos Bank and ASN Bank - Only provide micro-finance to the poor, e.g. Grameen Bank
	7. Resilience in loan granting	- E&S (Environment and Social) Assessment by Standard Chartered (negative screening) - Equator Principles (mainly for project finance)
	8. Sustainable financial products	- Green bonds, sustainable shipment letter of credit, SRI, preferential interest rate for hire purchase of machineries with environmental improvement/energy efficiency

For each archetype:
Q1. Do you think that this is a sustainable business model?
If not, please give reason(s) and go to Q4
Q2. Could you think of any more examples under this archetype?
Q3. Do you have any comments on this archetype?
For general questions:
Q4. Which archetype do you think is the most effective one in contributing to sustainability? Why?
Q5. Which archetype do you think is the least effective one in contributing to sustainability? Why?
Q6. Can you think of any other sustainable business model archetype(s) not mentioned in this questionnaire?

Appendix D. Example categorization of one of the coding exercises for "Inclusive value creation"

Business model archetype	Primary business model innovation	Industry example	Potential mechanism for delivering sustainability	Main sustainability benefit
Supporting social enterprises	Value proposition	DBS Bank's Social Enterprise Special Package, HSBC's Social Enterprise Business Centre	Encourage social entrepreneurs by providing financing and business advice.	Social
Supporting first-time home buyers	Value proposition	Barclays' First-time home buyer centre	Provide mortgage advice and cooperate with government's Help-to-buy scheme to support first-time home buyers to top up the deposit with an equity loan.	Social
Support NGOs	Value proposition	Bank of East Asia's Special Package Service for NGOs and Online Donation Services	Fee and charge concession, online donation platform for NGOs	Social
Support SMEs	Value proposition	Bank of China (HK)'s unsecured Small Business Loan	Loan to SME without taking collaterals	Social
Support ethnic minority	Value proposition	Standard Chartered's Islamic Banking	Provide the right Shariah-compliant solutions	Social
Support LGBT customers	Value creation and delivery	TD Bank's LGBT marketing campaign	Create a more inclusive environment for LGBT segment	Social
Support underserved markets	Value proposition	M-Pesa branchless banking service	Provide mobile phone-based money transfer and micro-finance service	Social

Appendix E. Posthoc test (Mauchley's)

Mauchly's Test of Sphericity[a] for "Attractiveness"

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Attractiveness	0.747	86.437	27	0.000	0.931	0.954	0.143

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.
[a] Design: Intercept Within Subjects Design: Attractiveness.
[b] May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects for "Attractiveness"

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Attractivenss	Sphericity Assumed	52.887	7	7.555	11.262	0.000
	Greenhouse-Geisser	52.887	6.519	8.113	11.262	0.000
	Huynh-Feldt	**52.887**	**6.680**	**7.918**	**11.262**	**0.000**
	Lower-bound	52.887	1.000	52.887	11.262	0.001
Error (Attractiveness)	Sphericity Assumed	1404.113	2093	0.671		
	Greenhouse-Geisser	1404.113	1949.119	0.720		
	Huynh-Feldt	1404.113	1997.181	0.703		
	Lower-bound	1404.113	299.000	4.696		

Mauchly's Test of Sphericity[a] for "Purchase intention"

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Purchase intention	0.739	89.740	27	**0.000**	0.920	0.942	0.143

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.
[a] Design: Intercept Within Subjects Design: Purchase intention.
[b] May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects (for "Purchase intention")

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Purchase intention	Sphericity Assumed	38.445	7	5.492	12.779	0.000
	Greenhouse-Geisser	38.445	6.439	5.970	12.779	0.000
	Huynh-Feldt	**38.445**	**6.596**	**5.828**	**12.779**	**0.000**
	Lower-bound	38.445	1.000	38.445	12.779	0.000
Error (Purchase intention)	Sphericity Assumed	899.555	2093	0.430		
	Greenhouse-Geisser	899.555	1925.392	0.467		
	Huynh-Feldt	899.555	1972.308	0.456		
	Lower-bound	899.555	299.000	3.009		

Appendix F. Posthoc test (Tukey)

Pairwise Comparisons

Measure: Attractiveness

(I) Archetype	(J) Archetype	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	−0.067	0.062	0.283	−0.189	0.055
	3	−0.060	0.067	0.369	−0.191	0.071
	4	−0.180[*]	0.061	0.004	−0.300	−0.060
	5	0.167[*]	0.067	0.014	0.034	0.299
	6	0.290[*]	0.073	0.000	0.146	0.434
	7	0.203[*]	0.066	0.002	0.074	0.333
	8	0.073	0.058	0.205	−0.040	0.187
2	1	0.067	0.062	0.283	−0.055	0.189
	3	0.007	0.065	0.918	−0.121	0.135
	4	−0.113	0.068	0.099	−0.248	0.021
	5	0.233[*]	0.071	0.001	0.094	0.372
	6	0.357[*]	0.077	0.000	0.205	0.509
	7	0.270[*]	0.069	0.000	0.135	0.405
	8	0.140[*]	0.062	0.026	0.017	0.263
3	1	0.060	0.067	0.369	−0.071	0.191
	2	−0.007	0.065	0.918	−0.135	0.121
	4	−0.120	0.068	0.079	−0.254	0.014
	5	0.227[*]	0.072	0.002	0.085	0.368
	6	0.350[*]	0.074	0.000	0.204	0.496
	7	0.263[*]	0.069	0.000	0.127	0.400
	8	0.133[*]	0.057	0.021	0.021	0.246
4	1	0.180[*]	0.061	0.004	0.060	0.300
	2	0.113	0.068	0.099	−0.021	0.248
	3	0.120	0.068	0.079	−0.014	0.254
	5	0.347[*]	0.067	0.000	0.214	0.479
	6	0.470[*]	0.070	0.000	0.332	0.608
	7	0.383[*]	0.067	0.000	0.251	0.516
	8	0.253[*]	0.055	0.000	0.146	0.361
5	1	−0.167[*]	0.067	0.014	−0.299	−0.034
	2	−0.233[*]	0.071	0.001	−0.372	−0.094
	3	−0.227[*]	0.072	0.002	−0.368	−0.085
	4	−0.347[*]	0.067	0.000	−0.479	−0.214
	6	0.123	0.071	0.084	−0.017	0.263
	7	0.037	0.071	0.608	−0.104	0.177
	8	−0.093	0.061	0.127	−0.213	0.027
6	1	−0.290[*]	0.073	0.000	−0.434	−0.146
	2	−0.357[*]	0.077	0.000	−0.509	−0.205
	3	−0.350[*]	0.074	0.000	−0.496	−0.204
	4	−0.470[*]	0.070	0.000	−0.608	−0.332
	5	−0.123	0.071	0.084	−0.263	0.017
	7	−0.087	0.073	0.235	−0.230	0.057
	8	−0.217[*]	0.066	0.001	−0.346	−0.088
7	1	−0.203[*]	0.066	0.002	−0.333	−0.074
	2	−0.270[*]	0.069	0.000	−0.405	−0.135
	3	−0.263[*]	0.069	0.000	−0.400	−0.127
	4	−0.383[*]	0.067	0.000	−0.516	−0.251
	5	−0.037	0.071	0.608	−0.177	0.104
	6	0.087	0.073	0.235	−0.057	0.230
	8	−0.130[*]	0.057	0.024	−0.243	−0.017

(continued)

Pairwise Comparisons

Measure: Attractiveness

(I) Archetype	(J) Archetype	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
8	1	−0.073	0.058	0.205	−0.187	0.040
	2	−0.140*	0.062	0.026	−0.263	−0.017
	3	−0.133*	0.057	0.021	−0.246	−0.021
	4	−0.253*	0.055	0.000	−0.361	−0.146
	5	0.093	0.061	0.127	−0.027	0.213
	6	0.217*	0.066	0.001	0.088	0.346
	7	0.130*	0.057	0.024	0.017	0.243

Based on estimated marginal means
*. The mean difference is significant at the 0.05 level.
[a] Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Pairwise Comparisons

Measure: Purchase intention

(I) Archetype	(J) Archetype	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	−0.143*	0.051	0.006	−0.244	−0.042
	3	−0.090	0.052	0.087	−0.193	0.013
	4	−0.163*	0.047	0.001	−0.256	−0.071
	5	0.023	0.057	0.684	−0.089	0.136
	6	0.183*	0.054	0.001	0.076	0.290
	7	0.197*	0.056	0.001	0.086	0.307
	8	0.000	0.050	1.000	−0.097	0.097
2	1	0.143*	0.051	0.006	0.042	0.244
	3	0.053	0.055	0.329	−0.054	0.161
	4	−0.020	0.054	0.714	−0.127	0.087
	5	0.167*	0.055	0.002	0.059	0.274
	6	0.327*	0.063	0.000	0.203	0.450
	7	0.340*	0.061	0.000	0.220	0.460
	8	0.143*	0.049	0.004	0.046	0.241
3	1	0.090	0.052	0.087	−0.013	0.193
	2	−0.053	0.055	0.329	−0.161	0.054
	4	−0.073	0.052	0.156	−0.175	0.028
	5	0.113*	0.052	0.031	0.010	0.216
	6	0.273*	0.060	0.000	0.156	0.391
	7	0.287*	0.053	0.000	0.183	0.390
	8	0.090	0.048	0.062	−0.004	0.184
4	1	0.163*	0.047	0.001	0.071	0.256
	2	0.020	0.054	0.714	−0.087	0.127
	3	0.073	0.052	0.156	−0.028	0.175
	5	0.187*	0.052	0.000	0.084	0.290
	6	0.347*	0.053	0.000	0.243	0.450
	7	0.360*	0.051	0.000	0.261	0.459
	8	0.163*	0.046	0.000	0.073	0.254
5	1	−0.023	0.057	0.684	−0.136	0.089
	2	−0.167*	0.055	0.002	−0.274	−0.059
	3	−0.113*	0.052	0.031	−0.216	−0.010
	4	−0.187*	0.052	0.000	−0.290	−0.084
	6	0.160*	0.057	0.005	0.048	0.272
	7	0.173*	0.058	0.003	0.060	0.287
	8	−0.023	0.047	0.621	−0.116	0.069
6	1	−0.183*	0.054	0.001	−0.290	−0.076
	2	−0.327*	0.063	0.000	−0.450	−0.203
	3	−0.273*	0.060	0.000	−0.391	−0.156
	4	−0.347*	0.053	0.000	−0.450	−0.243
	5	−0.160*	0.057	0.005	−0.272	−0.048
	7	0.013	0.056	0.812	−0.097	0.124
	8	−0.183*	0.055	0.001	−0.292	−0.075
7	1	−0.197*	0.056	0.001	−0.307	−0.086
	2	−0.340*	0.061	0.000	−0.460	−0.220
	3	−0.287*	0.053	0.000	−0.390	−0.183
	4	−0.360*	0.051	0.000	−0.459	−0.261

(continued)

Pairwise Comparisons						
Measure: Purchase intention						
(I) Archetype	(J) Archetype	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference [a]	
					Lower Bound	Upper Bound
	5	−0.173[*]	0.058	0.003	−0.287	−0.060
	6	−0.013	0.056	0.812	−0.124	0.097
	8	−0.197[*]	0.051	0.000	−0.297	−0.096
8	1	0.000	0.050	1.000	−0.097	0.097
	2	−0.143[*]	0.049	0.004	−0.241	−0.046
	3	−0.090	0.048	0.062	−0.184	0.004
	4	−0.163[*]	0.046	0.000	−0.254	−0.073
	5	0.023	0.047	0.621	−0.069	0.116
	6	0.183[*]	0.055	0.001	0.075	0.292
	7	0.197[*]	0.051	0.000	0.096	0.297

Based on estimated marginal means
[*]. The mean difference is significant at the 0.05 level.
[a] Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

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