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*University of Greenwich  
Business School, University of Greenwich,  
Greenwich, SE10 9LS, London,  
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*University of Greenwich  
Business School, University of Greenwich,  
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*Full Length Research Paper*

# **The social side of IPOs: Twitter sentiment and investors' attention in the IPO primary market**

**Gian Luca Gregori, Luca Marinelli, Camilla Mazzoli and Sabrina Severini\***

Department of Management, Università Politecnica delle Marche, Piazzale Martelli n.8, 60121 Ancona, Italy.

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**Despite in recent years the impact of market sentiment on the performance of listing firms has gained increased attention from academics and professionals, a research question that remains uncovered deals with how the retail investor sentiment and attention might impact the IPO pricing in the primary market. This analysis proposes a stochastic frontier model approach on a sample of 412 US firms listed between 2010 and 2016. The main research questions aim at revealing the effects that the number and the sentiment of the Tweets in the 3 months prior to each IPO produce in terms of the distance between the maximum achievable price and the actual offer price of the stocks. Results show that the more favorable the sentiment, the closer the offer price is set to the maximum achievable to the benefit of the issuer; on the contrary, negative sentiments seem to play no effect on the pricing, supporting the idea that investors are net buyers of attention-grabbing news. The number of Tweets shows no effect as well. *Few and good* is then the desirable attention and sentiment that issuers should wish for their listing firms.**

**Key words:** Initial public offering, sentiment, investors' attention, underpricing, social media.

## **INTRODUCTION**

IPOs are naturally affected by information asymmetry problems that increase the difficulties with establishing an appropriate value for the new shares in an untried company (Antón et al., 2011; Xia et al., 2012). Previous literature attempting to draw factors which mitigate the information asymmetry - between the issuer and the underwriter on one side, and between the underwriter and investors on the other side - has surprisingly devoted little attention to the relationship between media information production and IPO valuation (Bajo and Raimondo, 2017). This lack of interest among the

scientific community may in part be because such studies combine two, seemingly different, disciplines, that is, mass communication and finance (Kolbeins, 2010). The mass communication literature explains how the media have been able to draw people's attention to the stock market and generate interest in stocks. By solely covering a topic, the media raise that subject's importance in the eyes of investors, in that the more attention the media pays a particular subject, the more important the public believes that topic to be (McCombs and Reynolds, 2009). Furthermore, media can influence

\*Corresponding author. E-mail: [s.severini@univpm.it](mailto:s.severini@univpm.it).

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people's attitudes towards subjects by portraying them in a positive or a negative light (Blankespoor et al., 2014; Irbo and Mohammed, 2020; Tewksbury and Scheufele, 2009). Yet some recent studies (Tetlock, 2007, 2011) seem to suggest that media coverage may be significantly related to asset prices even when it does not reveal hard, breaking news, contrasting with the traditional asset-pricing theory.

A restrained number of studies investigate the media information production and its effect on the IPO pricing in terms of the attention that media chase upon investors and of the sentiment they can generate regarding listing firms, which ultimately drives retail investors' demand. Nevertheless, such studies mainly concentrate on the secondary market effect of investors' attention and market sentiment.

A research question that remains uncovered in the IPO pricing context deals with how the retail investor sentiment and/or attention might impact the IPO pricing in the primary market. Truth be told, it is easily arguable that primary market players (institutional investors) are less influenced by the sentiment generated by the media or by social networks, as they have access to more detailed information and possess a greater ability in processing raw information than retail investors (Bajo and Raimondo, 2017). Nevertheless, the way the IPO offer price is set and adjusted in the primary market is driven by several factors, including the expectations that underwriters and investors have in terms of the IPO secondary market success<sup>1</sup>. So far, attention and sentiment are likely to affect the way the offer is priced in the primary market: if institutional investors anticipate an aloof investor sentiment or feeble attention in the secondary market (moderate underpricing), they would demand a higher compensation for re-selling shares (that is, they expect the underwriter to keep the offer price below its maximum achievable value in order to leave a deliberate pre-market underpricing as a compensation).

This study empirically tests to what extent the social media Twitter - as sentiment and attention generator - works as a benefit or a detriment for issuing firms. Researchers hence propose a stochastic frontier model where the effects of market sentiment on the primary market pricing are revealed. Based on a sample of 412 US firms listed between 2010 and 2016, this analysis investigate the effects that market attention and sentiment - disclosed by the number and sentiment of the Tweets in the 3 months prior to each IPO - produce in terms of deliberate pre-market underpricing (that is the distance between the maximum achievable price and the actual offer price of the stocks). This study provides evidence that the more positive the sentiment, the closer

the offer price is set to the maximum achievable to the benefit of the issuer; on the contrary, negative sentiments charge a discount with respect to the firm's fair price in order to ease the completion of the offer: '*few and good*' is then the desirable attention and sentiment that issuers should wish for their listing firms in order to mitigate the information asymmetry which naturally affects new listings. The contribution of this paper lies in enlarging the debate on the effect of market sentiment in the IPO pricing embedding the primary market dynamics rather than limiting the analysis to the secondary market pricing. Although several studies have documented a positive correlation between investors' sentiment and the underpricing, employing different proxies to capture the investors' attention/sentiment, none of these studies investigate the relationship between IPO primary market pricing and market sentiment. In particular, Da et al. (2011) used the Google Search Volume Index (SVI) as a proxy of investors' attention and found that such attention positively relates to initial returns, as an expression of the secondary market demand. Bajo and Raimondo (2017) enlarge the perspective to the investors' sentiment by relating measures of sentiment to the IPO pricing; they maintain that a positive sentiment produced by newspaper news is positively associated with the level of observed underpricing, suggesting that first-day returns increase in response to a more benevolent press, as an effect of the larger generated demand. Tsukioka et al. (2018) have investigated whether pre-IPO investor sentiment on the Yahoo finance message boards relates to the IPO initial returns. They found that investor attention and sentiment positively relate to the likelihood that IPO firms set their offer price at the filing range's maximum point and they are also related to higher initial returns.

With the advent of social media, the range of action of the literature has been extended by covering social media as a source of information production in IPO pricing: Liew and Wang (2016) published the first paper correlating Twitter and IPOs, in which they conclude that there is a positive correlation between investors' sentiment in the days before the IPO and the IPO return on the first day of trading. Based on this evidence, this study empirically demonstrates that when a positive sentiment is disclosed by social media on the listing firms the offer price is set closer to the maximum achievable to the benefit of the issuer, thus supporting the role of social networks in mitigating the information asymmetry which naturally affects new listings.

## HYPOTHESIS AND RELATED RESEARCH

In recent years, the impact of attention and sentiment on the performance of listing firms has gained more and more attention from both academics and professionals. One stream of literature focuses on how investors' sentiment might explain the IPOs pricing anomalies. As

<sup>1</sup>Hanley (1993) first documented that the adjustment of the offer price to the midpoint of the filing range is positively correlated with the underpricing, meaning that the relation of the final offer price to the offer range disclosed in the preliminary prospectus is a good predictor of the level of initial returns.

an example, according to Ljungqvist et al. (2006) issuers know that the presence of a class of irrationally exuberant investors, sentiment investors will bid up prices in the after-market, leading to higher offer prices. In addition to this, Derrien (2005) maintains that regular investors purchase the over-valued IPO shares with the expectation of re-sell them to sentiment investors at even higher prices, the demand for shares increases, leading to underpricing and negative performance in the long term. Fluctuations in investor sentiment, could also provide an explanation of why so many companies go public during some periods (hot markets) and the dramatic fall in the number of IPOs since 2000 (Lowry, 2003). At last, Cornelli et al. (2006) found that over-optimism by small investors can cause IPOs to trade at prices on the first day at 40.5% higher, on average, than they would have in the absence of sentiment demand.

Another stream of IPO literature has documented that media-provided information might facilitate or inhibit the process of investors' impression formation (Bhattacharya et al., 2009; Bushee et al., 2010; Pollock and Rindova, 2003). Numerous researchers have also suggested that the media plays an important role in legitimization processes (Kosicki, 1993; McCombs et al., 1997; Rogers et al., 1993) especially during the waiting period when retail investors' purchases are attention-driven rather than information based (Bushee et al., 2010; Bhardwaj and Imam, 2019). However, these studies share one common gap in that they only consider the role of attention and sentiment on the secondary market by focusing on the IPO performance as measured by underpricing (Da et al., 2011; Liu et al., 2014). Despite social media are more likely to reflect retail rather than institutional attention and sentiment, previous studies have documented that the way the offer price is set and adjusted in the primary market - where underwriters and institutional investors build the book - is largely influenced by the expectations that they both have regarding the secondary market demand (Ibbotson et al., 1988; Hanley, 1993; Thornton et al., 2009). Jiang and Li (2013), focusing on the Hong Kong market, provide evidence that individual investor sentiment could influence both the pre-market and aftermarket IPO pricing. Moreover, the study of Chung et al. (2017) shows a spillover effect from pre-market to aftermarket sentiment given that initial returns are significantly and positively related to the individual investors' sentiment. Researchers therefore argue that a positive sentiment, as revealed by the tone of the Tweets, communicates an expected investors' interest towards the offer and in turn the demand for shares. If it is so, the offer price will be set as close as possible to the maximum achievable and no 'discounts' must be imposed to complete the offer, thus providing a favorable pricing for the issuer in the primary market.

Based on this assumption this study tests the following hypothesis:

*H1: a positive sentiment on the listing firm reduces the*

*distance between the offer price and the maximum achievable value.*

Previous literature has demonstrated that while a positive sentiment is likely to increase the investors' interest towards the IPO and in turn the demand for shares, negative sentiment appears not to be associated with the price behavior on the first day of trading (Barber et al., 2008; Bajo and Raimondo, 2017). In particular, the study of Ahmad et al. (2016) finds that media-expressed negative tone impacts on firm-level returns occasionally, because only sometimes media comment contains value-relevant information or news while other times can be sentiment (or noise). Moreover, investors are net buyers of attention-grabbing news: they purchase stocks that have caught their attention, but they are less sensitive to negative information because they tend to only sell stocks they already own. Following these evidences, this study then tests the following hypotheses:

*H2: a negative sentiment on the listing firm has no effect on the distance between the offer price and the maximum achievable value.*

Consistent with previous literature on the attention-grabbing news researchers also check for the effect of the number of Tweets on the primary market pricing; the study here hypothesizes that a larger number of Tweets is likely to catch investors' attention thus possibly anticipating a large demand on the market, as follows:

*H3: the higher the number of Tweets (investors' attention) on the listing firm, the lower the distance between the offer price and the maximum achievable value.*

## DATA

### Sample selection

The sample of US IPOs was collected from the Thomson One Deals database (TOD). Researchers searched for all the IPOs occurring from January 2010 to December 2016, on the NASDAQ and NYSE. IPOs with the following characteristics are excluded: offer price below \$5,<sup>2</sup> non-common shares, closed-end funds, filings by foreign-domiciled firms, Master Limited Partnerships (MLPs), American Depository Receipts (ADRs) and Real Estate Investment Trusts (REITs). Information regarding financial statements of issuing firms from Compustat are also included. Jay Ritter's website was also used to obtain information regarding the market conditions and the rankings on US underwriters' reputations.

<sup>2</sup>Stocks with a price below \$5.00 per share are subject to the provisions of the Securities enforcement Remedies and Penny Stock Reform Act of 1990, aimed at reducing fraud and abuse in the penny stock market (Ritter, 1991).

## Stock Tweets collection

Stock Tweets represents a restricted category of Tweets; for this reason, they have peculiarities that deserve to be discussed, especially in terms of how they can be collected for research purposes. According to Bar-Haim et al. (2011) stock Tweets differ from common Tweets by having one or more references to stock symbols - as for example the tickers preceded by the dollar sign - but also hashtags, the labels represented by the symbol “#” that users apply to certain content. Stock Tweets, as well as the common ones, are typically characterized by an informal language, slang expressions or abbreviated and ungrammatical utterances (Bar-Haim et al., 2011). Due to this low level of lexicon standardization, the automatic sentiment analysis could produce a relative low level of accuracy (Borromeo and Toyama, 2015).

Based on this premise, in this paper the Twitter data collection and sentiment evaluation were both conducted manually by the authors. In particular, data were collected by adopting the advanced search features provided by the Twitter platform. To detect stock Tweets, researchers set a search criterion that has been applied to each company. By setting the advanced search feature, this research was able to identify all the stock Tweets related to each company that have been published in the three months prior to the firm's IPO. Researchers then selected the content of those stock Tweets specifically related to the company, that is, only those Tweets that included one ticker (Bar-Haim et al., 2011). A total number of 9,560 stock Tweets were then selected and analysed.

## METHODS

This study employed a stochastic frontier approach to test all the cross-sectional relationships stated in the hypotheses. The Stochastic Frontier Analysis (SFA) combines an ordinary linear regression model with a composite error term (Aigner et al., 1977). The error term can be broken down into a symmetric error term, which represents the usual stochastic error terms, and an asymmetric error component. This non-idiosyncratic disturbance represents a systematically negative bias due to some inefficient pars. Widely used in estimation of production efficiency, this methodology has been adopted also in pricing IPOs (Hunt-McCool et al., 1996). Under the IPO pricing scenario, the SFA allows an estimation of the maximum or “efficient” offer price that would prevail in a situation of full information, given the firm's characteristics.

$$\begin{aligned}
 Y_i &= f(X_i, \beta) + \varepsilon_i \\
 \varepsilon_i &= v_i - u_i \\
 v_i &\sim N(0; \sigma_v^2) \\
 u_i &\sim N^+(0; \sigma_u^2)
 \end{aligned}$$

Typically, in the IPO pricing context,  $Y$  is the observed offer price of the issuer  $i$ ;  $X$  is a vector of the observed firm's characteristics;  $\beta$  is a vector of parameters to be estimated;  $v_i$  is the symmetric error component with a normal distribution and  $u_i$  is the asymmetric error

term with a half-normal distribution, truncated at zero.<sup>3</sup> In other terms, for a given IPO, a point on the frontier represents the unobserved “fair” offer price, that is, the maximum price that investors are willing to pay given a set of “pricing factors” included in the vector of input  $X$ . The stochastic frontier assumes that a maximum price exists, and that actual prices fall below the maximum for some systematic reasons such as “economic inefficiency” (or “deliberate premarket factors”). This deviation from the maximum price can be measured by a one-sided error term. As pointed out in Hunt-McCool et al. (1996), the advantage of using this method in IPO pricing is to avoid using aftermarket information to compute IPO prices in the primary market.

Reber and Vencappa (2016) provided an additional contribution by modelling the exogenous factors that influence the gap from the frontier. In other terms, when fitting the IPO offer price frontier, they also explicitly model the heteroscedasticity of the one-sided error term (Kumbhakar and Lovel, 2003). Empirically, the one-sided error variance is modelled together with the frontier as:

$$\sigma_{u_i}^2 = f(Z_i; \gamma)$$

where  $\sigma_u^2$  gives the dimension of the deliberate premarket underpricing and  $Z$  is a vector that includes a set of variables capturing the information asymmetry such as: the market conditions at the time of the IPO, the deal characteristics, the presence of third-party certification and, more generally, the uncertainty surrounding the IPO. The model presented in this study, that takes a leaf from Reber and Vencappa (2016), is built around a sentiment variable which account for the number and nature of the Tweets that have interested each IPO in the sample on the 3 months prior to the listing as predictors of the distance of the price set from the frontier. In details, researchers expect to observe deviations between the actual and optimal price correlated to the nature and intensity of the market sentiment as revealed by the social media.

## Data and measurement of variables

The model uses the offer price per share as the dependent variable. Explanatory variables are classified into two categories: “pricing factors” and “deliberate premarket factors”. As for the first category, following Hunt-McCool et al. (1996) and Chen et al. (2002), researchers controlled for firm size, using the logarithm of the book value of the asset in the accounting period before the offer (ASSET). To account for the riskiness of the firm the logarithm of long-term debt (LTB) in the accounting period before the IPO was computed (Habib and Ljungqvist, 2001). As in Peng and Wang (2007), researchers expected a negative correlation between debt level and the IPO market price<sup>4</sup>. To consider the potential role of asymmetric information, researchers added an INDUSTRY dummy to account for the fact that firm's value is unlikely to be uniformly distributed across the industry (Ritter, 1991). In line with previous studies, researchers allocated IPO firms into 12 two-digit SIC industry sectors. The presence of different sectors allowed us to take into consideration not only differences in riskiness but also in growth opportunities. Table 1 provides a detailed review of all the variables (pricing factors and deliberate pre-market pricing factors) that were used in this the study along with the data sources.

<sup>3</sup>To account for technical inefficiency,  $u_i$  can be assumed to follow either half normal, truncated normal, exponential, or two-parameter gamma and represents the independently distributed non-negative random variable.

<sup>4</sup>Researchers initially put a set of firm's characteristics variables into the model (such as EBIT, Capital Expenditure, Research and Development expenses and so on). Due to the high correlation between those variables they were dropped from the model to avoid multicollinearity issues.

**Table 1.** Pricing factors and deliberate pre-market pricing factors in the SFA

| Variable                                     | Source             | Description of variable  |
|--|--------------------|--|
| <b>Dependent variable</b>                    |                    |  |
| OFFER PRICE                                  | Thomson            | Offer price per share in U.S.\$  |
| <b>Panel A: Pricing factors</b>              |                    |  |
| ASSET  | Compustat          | Total assets in the accounting period before the IPO   |
| LTD  | Compustat          | Long-term debt scaled by total assets in the accounting period before the IPO  |
| INDUSTRY                                     | Compustat          | Industry sector classification at the two-digit SIC level  |
| <b>Panel B: Deliberate premarket factors</b> |                    |  |
| SALES  | Thomson            | Total sales in the accounting period before the IPO  |
| EQ_RET                                       | Thomson            | Logarithm $\left( 1 + \frac{\text{Secondary shares retained}}{\text{Shares offered}} \right)$ where Secondary shares retained= Share Outstanding – Total shares sold |
| OFFER_SIZE                                   | Thomson            | IPO Gross proceeds scaled by total assets in the accounting period before the IPO  |
| FEE  | Thomson            | Underwriting fees in U.S.\$ million  |
| UW_REP                                       | Jay Ritter Website | Underwriter reputation rank  |
| VC_backed                                    | Thomson            | Dummy variable equal to 1 in cases where the company is backed by a venture capital company, or zero otherwise   |
| HOT_COLD                                     | Jay Ritter Website | Average market UP (exclude penny stocks, units, closed-end funds, etc) in the month before the issue date  |
| INST_DEM                                     | Thomson            | The percentage of shares held by all institutional investors after the IPO   |
| TWEET_POS                                    | Twitter            | Log of total number of positive tweets regarding the IPO in the 3 months prior to the listing (excluded the first trading day)                                       |
| TWEET_NEG                                    | Twitter            | Log of total number of negative Tweets regarding the IPO in the 3 months prior to the listing (excluded the first trading day)                                       |
| NUM  | Twitter            | Total number of Tweets regarding the IPO in the 3 months prior to the listing (excluded the first trading day)   |

This table presents the definitions of the dependent and independent variables used in the SFA model. For all models, offer price per share is the dependent variable. Pricing factors and deliberate premarket factors are the independent variables. The pricing factors are derived from standard financial theory and represent the main drivers of the offer price, the primary value drivers of equity. The deliberate premarket factors include factors which explain the distance from the maximum achievable offer price. This category involves exogenous factors that do not depend on the firm's potentiality or intrinsic characteristics but that can influence the magnitude of the deliberate premarket discount. It includes proxy variables relating to issuing firm attributes, deal (offer) characteristics, third-party certification, hot/cold market indicator, private and institutional investors firms' demand for capital. The total number of Tweets regarding the IPO in the 3 months prior to the listing as well as total number of positive and negative Tweets regarding the IPO in the 3 months prior to the listing are also included. Data sources include Thomson One Deal, Compustat, Twitter, Jay Ritter's web site [<http://bear.warrington.ufl.edu/ritter/ipodata.htm>].

As for the second category, that is, “deliberate premarket factors”, these variables include factors that explain the distance of the actual price from the maximum achievable offer price. This category involves exogenous factors that do not depend on the firm's potential performance or its intrinsic characteristics, but that can influence the magnitude of the deliberate premarket underpricing (Reber and Vencappa, 2016).

The size of the firm was controlled by means of the

SALES effect because it is reasonable to expect that larger firm size implies less uncertainty, better operation conditions, and higher efficiency (Peng and Wang, 2007). Researchers used the proportion of stocks owned by insiders (EQ\_RET) as a measure of the risk characteristics of the IPO that are negatively related to the offer price (Beatty and Ritter, 1986). They also argued that the larger the equity retained, the smaller the distance from the fair offer price for an IPO (Bradley and Jordan, 2002; Loughran

and Ritter, 2004; Lowry and Murphy, 2007).<sup>5</sup> The logarithm of the amount of gross proceeds was used and scaled by

<sup>5</sup>The impact of the variable Equity Retained on underpricing is mixed when used in stochastic frontier models. On the one hand, Hunt-McCool et al. (1996) report a positive relationship between equity retained and estimated offer price. On the other hand, Chen et al. (2002) and Reber and Vencappa (2016) do not find a statistically significant relationship.

total assets in the accounting period before the IPO to account for the offer size (OFFER\_SIZE) and as a signalling variable (Reber and Vencappa, 2016). The logarithm of fee (FEE) as a proxy for information risk was added because underwriters ask for a higher commission when facing more severe asymmetric information problems (Meng et al., 2016). In line with Carter and Manaster (1990), researchers included the variable underwriter reputation (UW\_REP). Generally, low risk firms attempt to reveal their low risk characteristic to the market by selecting a highly prestigious underwriter: the more highly ranked the underwriter is, the higher the efficiency achieved in price setting. This means that if the firm is followed by underwriters with a good reputation, the offer price is expected to be set closer to the true value of the firm. Researchers also introduced a dummy variable (VC\_backed) that is equal to 1 in cases where the company is backed by a venture capital company, or zero otherwise. The market condition was taken into account by including a hot and cold market indicator (HOT\_COLD). This variable represents the average market underpricing in the month before the issue date (excluding penny stocks, units, closed-end funds, etc).

To better understand the role of institutional investors in the bookbuilding process, this study also controlled for the institutional IPO demand (INST\_DEM) by using the percentage of shares held by all institutional investors after the IPO.<sup>6</sup> Following the argument proposed by Benveniste and Spindt (1989) and later empirically tested by Hanley (1993), researchers expected high (low) demand to reveal positive (negative) information that causes the offer price to be adjusted upward (downward). The intuition behind this hypothesis is that IPOs are not fully priced by underwriters because of the uncertainty they face as to demand for new shares.<sup>7</sup> Therefore, to increase the probability of success and to clear the aftermarket, the investment banker sets the offer price deliberately low. Researchers would expect to find that market sentiment allows investment banks to control the demand in the primary market, resulting in less uncertainty and a better price accuracy process.

As far as the core sentiment variables are concerned (deliberate pre-market pricing factors), researchers collected, for each IPO in the sample, the stock Tweets released in the 3 months before the IPO, excluding the first trading day<sup>8</sup>. This study chose such a time frame in order to consider the signals coming from the secondary market while the book is built in the weeks prior to the listing. Both data collection and data coding were carried out by the authors. Coding instructions as well as a standardized coding worksheet were jointly created and agreed by the authors in order to ensure the consistency in the coding procedure. Despite the evident advantage in term of time-saving and sample size, researchers intentionally avoided any automated content analysis tool; possible shades in the content of the Tweets (sarcasm, emoticons and double meanings) would in fact have probably been misunderstood by any automated tool. Once the Tweets were extracted, their sentiment was assessed into 'positive' and 'negative' categories

<sup>6</sup>The information regarding the participation of the institutional investors to the offer are not publicly available. Therefore, as many of previous authors did, researchers made use of the first reported holding by investors at the end of the offering quarter as a proxy for the participation to the IPO (Reuter, 2006; Ritter and Zhang, 2007; Field and Lowry, 2009).

<sup>7</sup>There is an asymmetry in the bankers' expected profits as the result of the SEC institutional constraint which prohibits adjusting the offer price ex post to clear the primary market and the uncertainty about the exact realization of demand for the issue.

<sup>8</sup>It is important to remember that the quarterly period considered did not include the first day of trading, so the sentiment was essentially analyzed until the eve of the IPO: this reflects once again the purpose of our work, which is to evaluate what happened before the listing. Considering also the actual day of listing, a "procedural bias" would have been committed, as it is certainly more likely that a company would be Tweeted in the D-Day of its life than in the previous days (or months).

(Liu, 2015). The first category identifies the Tweets which denote a veil of optimism or, sometimes, of pure enthusiasm on the part of users towards the company itself. Some of the words most used by "positive Tweeters" are love, great, jump, interesting.

The second category includes Tweets which sometimes consist of attempts, are volunteers and not, to influence the market through the disclosure of negative or pessimistic news about one society. Sometimes sarcasm is the way 'negative Tweeters' use to express their negative view on a firm. Examples of words recurring in negative Tweets are: fail, terrible, waste of, down.

### Descriptive statistics

Table 2 presents summary statistics for the 412 IPOs in the sample. The average offering price is US\$14.51 per share. The average value of total assets of the listing firms prior to the offer, as a measure of the level of operations, is US\$1.66 billion. The offer size variable indicates that, on average, firms have US\$335 million. On average, underwriting fees are \$1 million. The average rank of an underwriter is 7.8, out of a maximum attainable of 9; so, researchers can conclude that, on average, only highly ranked underwriters followed the issues. The shares owned by insiders' amount to approximately 60%, which could be a positive signal of how confident the insiders are regarding the firm's prospects. The institutional demand represents around the 70% of the shares held after the IPO. IPOs that are VC backed represent the 60% of the sample. As far as the sentiment variables are concerned, the average number of Tweets in the 3 months before the IPO is 35 (out of a maximum of 337). On average, positive Tweets tend to exceed negative ones.

## EMPIRICAL RESULTS AND DISCUSSION

Table 3 presents the estimates of the Stochastic Frontier model. The output used in the stochastic frontier model is the natural logarithm of the offer price. The inputs or pricing factors X and the deliberate premarket factors Z used to model the variance of the non-idiosyncratic error component are those already discussed earlier.

Model 1 in Table 3 reports the results of the model used to estimate the maximum offer price achievable, according to the Reber and Vencappa (2016) framework. It only provides the basic baseline regression without the relationship variables related to deals.

As for the control variables, in contrast with Chen et al. (2002), but in line with Hunt-McCool et al. (1996) and Peng and Wang (2007) researchers found a positive impact of the asset book value on the IPO offer price. Contrary to Koop and Li (2001), however, the study found that firms belonging to industries with great growth potential, such as electronics and communications, are undervalued.

Moving to the variables explaining the distance from the maximum achievable offer price, when the characteristics of the deal are considered, researchers find that the higher the equity retained by the insiders, the smaller the closer to price to its maximum achievable. This result suggests that underwriters might take into account equity retention when pricing the IPO because the greater the retention, the lower the probability of required aftermarket price support and, consequently, the

**Table 2.** Descriptive statistics.

| Variable                                     | Mean   | Median | Std. Dev. | Min.   | Max.    |
|--|--------|--------|-----------|--------|---------|
| OFFER PRICE (US\$)                           | 14.51  | 14     | 6.33      | 5      | 65      |
| <b>Panel A: pricing factors</b>              |        |        |           |        |         |
| ASSET (US\$ million)                         | 1,664  | 90.80  | 15,474    | 0.001  | 272,753 |
| LTD  | 0.278  | 0.121  | 0.420     | 0      | 3.974   |
| <b>Panel B: deliberate premarket factors</b> |        |        |           |        |         |
| lnSALES                                      | 4.162  | 4.300  | 2.261     | -6.214 | 11.557  |
| EQ_RET                                       | 0.564  | 0.197  | 0.483     | -6.428 | 2.717   |
| lnOFFER_SIZE (US\$ million)                  | 4.544  | 4.427  | 0.942     | 1.313  | 9.658   |
| FEE (US\$ million)                           | 1.191  | 1.4    | 0.470     | 0      | 3.017   |
| UW_REP                                       | 7.833  | 9.001  | 1.829     | 2.001  | 9.001   |
| VC_backed                                    | 0.613  | 1      | 0.487     | 0      | 1       |
| HOT_COLD                                     | 18.588 | 14.1   | 17.065    | -3.7   | 112.2   |
| INST_DEM (%)                                 | 29.213 | 18.807 | 28.379    | 0      | 134.41  |
| NUM  | 35.621 | 39     | 27.188    | 1      | 337     |
| TWEET_POS                                    | 7.247  | 6      | 7.006     | 0      | 75      |
| TWEET_NEG                                    | 2.674  | 2      | 3.490     | 0      | 29      |

This table presents summary statistics of the 412 US IPO of the sample. All accounting data is measured in the 3 years prior to the offer. Offer price is the offer price per shares in US\$. ASSET is the book value of assets in the accounting period before the IPO. LTD is the long-term debt in the accounting period before IPO. The study also include: the equity retained as the logarithm of (1+ (Secondary shares retained)/(Shares offered)), the underwriting fees in million U.S.\$. The hot and cold markets indicator represents the average market underpricing (excluding penny stocks, units, closed-end funds, etc.) in the month before the issue date. Underwriter reputation is based on tombstone rankings used in Carter and Manaster (1990) and updated on Jay Ritter's web page. The offer size is the gross proceeds scaled by total assets in the accounting period before the IPO. INST\_DEM is the percentage of shares held by all institutional investors after the IPO.

lower the variance of the inefficient error component. Also, researchers find evidence that size of the firm, as measured by sales, is negatively related to the distance thus supporting the idea that larger firms are perceived as less speculative (Hunt-McCool et al., 1996; Tinic, 1988); the underwriter reputation is not a critical variable in explaining the offer pricing. This last result is in line with Reber and Vencappa (2016) who conclude that underwriters' reputation does not affect the level of deliberate premarket underpricing and suggest that it is the amount of money spent on underwriting, rather than the choice of a particular underwriter, which is important in the primary market pricing (Koop and Li, 2001). Finally, the study found a significant influence of the market conditions on pricing: specifically, researchers found that the higher the average underpricing recorded in the month before the issue, the lower the distance from the frontier. In other terms, if the market is 'hot' there is no need for the investment bank to apply an intentional discount to guarantee the complete subscription of the offer. This study finally found empirical evidence that the percentage of shares held by all institutional investors after the IPO (as a proxy of the institutional investors demand) makes the offer price closer to its potential.

As far as the sentiment variables are concerned, model

1 shows a positive effect of the number of Tweets on the pricing of the offer, as in hypothesis 1: the higher the number of positive Tweet in the 3 months prior the IPO, the smaller the distance of the offer price to its maximum achievable. No significant relationship is found on the negative Tweets (models 2) in line with the second hypotheses and also with previous literature which demonstrated that investors are net buyers of attention-grabbing news: they purchase stocks that have caught their attention, but they are less sensitive to negative information (Barber et al., 2008; Bajo and Raimondo, 2017).

Contrary to the expectations (hypothesis 3), the attention variable 'number of Tweets' shows no significant effect on the pricing.

## Conclusion

In recent years, the impact of attention and sentiment on capital markets has developed as a mainstream of finance (Ritter, 2003). By solely covering a topic, media can raise people's attention towards that topic (McCombs and Reynolds, 2009). Furthermore, media can influence people's attitudes towards subjects by portraying them in

**Table 3.** Stochastic Frontier Approach estimates

| <b>Parameter</b>       | <b>1</b>             | <b>2</b>            | <b>3</b>            |
|------------------------|----------------------|---------------------|---------------------|
| InASSET                | 0.062***<br>2.691    | 0.045**<br>2.196    | 0.065***<br>2.962   |
| InLTD                  | -0.010<br>-0.656     | -0.001<br>-0.057    | -0.012<br>-0.788    |
| Oil and Gas            | 0.133<br>0.862       | 0.460<br>1.403      | 0.076<br>0.722      |
| Manufacturing          | -0.460**<br>-2.021   | -0.487***<br>-2.578 | -0.442*<br>-1.887   |
| Computers              | -0.081<br>-1.109     | -0.106<br>-1.414    | -0.082<br>-1.114    |
| Electronic equipment   | -0.462***<br>-4.011  | -0.412***<br>-3.810 | -0.389***<br>-3.725 |
| Transportation         | 0.043<br>0.331       | 0.036<br>0.308      | 0.063<br>0.463      |
| Scientific instruments | -0.137<br>-1.204     | -0.203<br>-1.576    | -0.143<br>-1.310    |
| Communication          | -0.147<br>-0.955     | 0.078<br>0.464      | -0.252**<br>-1.986  |
| Retail                 | -0.028<br>-0.193     | -0.057<br>-0.470    | -0.023<br>-0.183    |
| Health                 | -0.044<br>-0.402     | -0.061<br>-0.655    | -0.043<br>-0.394    |
| _cons                  | 2.646***<br>21.748   | 2.750***<br>21.983  | 2.650***<br>22.607  |
| <b>Insig2v</b>         |                      |                     |                     |
| _cons                  | -3.184***<br>-11.914 | -3.990***<br>-6.840 | -3.233***<br>-9.484 |
| <b>Insig2u</b>         |                      |                     |                     |
| InSALES                | -0.480***<br>-3.238  | -0.341***<br>-3.114 | -0.351***<br>-2.722 |
| EQ_RET                 | -0.418*<br>-1.608    | -0.667***<br>-2.595 | -0.273<br>-1.259    |
| OFFER_SIZE             | 0.000<br>0.026       | 0.000<br>-0.114     | 0.000<br>-0.033     |
| InFEE                  | -0.055               | -0.327              | 0.189               |



Table 3. cont;d

|             |           |          |          |
|-------------|-----------|----------|----------|
|             | -0.152    | -0.844   | 0.612    |
| lnUW_REP    | 1.324     | 2.066    | 0.885    |
|             | 1.501     | 2.141    | 1.130    |
| VC_backed   | 0.346     | 0.770    | 0.294    |
|             | 0.780     | 1.719    | 0.775    |
| HOT_COLD    | -0.079*** | -0.065** | -0.056** |
|             | -2.608    | -2.517   | -2.447   |
| INST_DEM    | -0.023**  | -0.014   | -0.023** |
|             | -2.232    | -1.311   | -2.188   |
| LnTWEET_POS | -0.535**  | -        | -        |
|             | -2.011    | -        | -        |
| LnTWEET_NEG | -         | 0.153    | -        |
|             | -         | 0.568    | -        |
| lnNUM       | -         | -        | 0.097    |
|             | -         | -        | 0.560    |
| _cons       | 0.130     | -3.530*  | -1.163   |
|             | 0.066     | -1.755   | -0.654   |
| sigma_v     | 0.204     | 0.136    | 0.199    |
|             | 7.484     | 3.429    | 5.866    |

All four models use the same pricing factors to estimate the fair offer price and also the same deliberate premarket factors to explain variations from the maximum achievable offer price. Model 1 includes the number of positive Tweets in the 3 months prior to the IPO, while models 2 replace the positive Tweets with the negative ones. Model 4 replaces sentiment variables with the attention variable 'number of Tweets'. \*\*\*, \*\*, and \* denote the statistical significance at the 1, 5, and 10% level, respectively. T statistics are reported in the parentheses.

a positive or a negative light (Tewksbury and Scheufele, 2009). According to Liu (2015) sentiment analysis, is the field of study that analyzes people's opinions, sentiments, appraisals, attitudes, and emotions toward entities and their attributes expressed in written text. In IPO studies, the application of sentiment from social media platforms - Twitter as an example - is a new territory worthy of a substantial amount of research efforts (Liew and Wang, 2016). Previous studies maintain that a positive retail investor sentiment produced by mass or social media is positively associated with initial returns (Da et al., 2011; Liew and Wang, 2016; Bajo and Raimondo, 2017; Tsukioka et al., 2018). However, such literature only considers the role of attention and sentiment on the secondary market by focusing on the IPO performance as measured by underpricing. A research question that is yet uncovered deals with how the retail investor sentiment

and/or attention might impact the IPO pricing in the primary market. In this paper researchers therefore test a stochastic frontier approach where the effects of market sentiment on the primary market pricing are revealed. Based on a sample of 412 US firms listed between 2010 and 2016, researchers investigate the effects that market attention and sentiment - disclosed by the number and sentiment of the Tweets in the 3 months prior to each IPO - produce in terms of deliberate pre-market underpricing (that is the distance between the maximum achievable price and the actual offer price of the stocks).

Results suggest that a positive sentiment on the listing firms helps to set the offer price closer to the maximum achievable value, thus yielding a benefit to the issuer; on the contrary, negative sentiments impose a discount on the firm's fair price in order to ease the completion of the offer.

Current results provide an analysis sentiment on IPOs, as this study supports the role of social networks in mitigating the information asymmetry which naturally affects new listings. Nevertheless, according to the perspective presented in this paper, firms should do their best in order to avoid any inflation in the number of Tweets also favoring the positive sentiment over the number. *Few and good* is indeed the desirable attention and sentiment that issuers should wish for their listing firms in order to maximize the benefits coming from Twitter.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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*Full Length Research Paper*

# **A test of subjective security and post adoption consumption alternation related to M-payment system among expatriates in China**

**Mebrahtu Gebrehans<sup>1\*</sup>, Li Chang<sup>1</sup> and Dawit Teclemariam Bahta<sup>2</sup>**

<sup>1</sup>School of Accounting, Dongbei University of Finance and Economics, Dalian, China.

<sup>2</sup>School of Business Management, Dongbei University of Finance and Economics, Dalian, China.

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China, the second-largest economy in the world, has been an eye-catching destination for several foreigners who wish to live and study there. As they are beneficiaries of the Chinese advanced digital payment system, subjective security in using the mobile payment system and the subsequent change in their consumption intention has been a behavioral concern that perplexes scholars. Using SEM, we integrated the technology acceptance model (TAM) with two Subjective security Constructs (perceived confidentiality and perceived trustworthiness) to determine their impact on the system's adoption intention. At the same time, we evaluated the change in consumption intention using one factor (post-adoption consumption intention). A self-administered questionnaire based on prior literature was developed, and a total of samples of 260 foreigners who are extensive users of mobile payment were engaged. The study revealed that once again, TAM's model constructs (perceived usefulness and perceived ease of use) are dominant factors of adoption intention. While one of the subjective security constructs (perceived trustworthiness) was found to be a significant decisive determinant factor, the other one (perceive confidentiality) was found to be a negative but insignificant factor in mobile payment adoption intention among the expatriates. Moreover, this study provides insight into the digital payment system and its impact on influencing consumption intention beyond adoption.

**Key words:** Technology acceptance model (TAM), subjective security, consumption behavior, expatriates.

## **INTRODUCTION**

The trajectory economic and technological advancement of China in the last few decades is considered as the result of the successful implementation of reform and open-up policy of the late 1980s (Dong et al., 2017). In line with this economic explosion, the digital payment system of China was always at the center. It has been

attracting many practitioners, researchers, and scholars. Chinese techno experts and their partners work around the clock to improve this technology to make it more convenient, inclusive, and secure. Scholars critically dissected this extraordinary advancement and added to the pool of knowledge. With the ever increase in

\*Corresponding author. Email: mebljtes@gmail.com.

information symmetry, continuously plunged fixed costs, and availability of various financial products and services, the digital finance system becomes an inseparable part of Chineses' financial system.

Barnes and Mattsson (2017) describe mobile commerce (m-commerce) as any economic transaction involving direct or indirect monetary value, executed via wireless technology using smartphones. According to m-commerce estimates, there had been 1.8 billion worldwide digital customers in 2018, leading 21.55 percent of the world's population to be online buyers. The number is set to increase by more than 2.14 billion in 2021 (UNESCO, 2018). China's slice of the worldwide online retail pie is already more than half and will rise even more in the coming years (Statista, 2019).

With the overall strong economic shield and technological advancement integrated with the increase in globalization and international economic ties and coactions, China becomes the center of attraction. It gravitates international students, immigrant employees, traders, and foreign tourists from every corner of the world. For instance, in 2016, China stood third globally for the biggest recipient of international students, with 442,773 new students step their foot in the nation (UNESCO, 2018). By 2018 this number grew to 492,185 (10.49 percent growth over 2017) (China Ministry of Education, 2019). At the same time, according to China daily, in 2019, the number of permanent registered numbers of foreign workers in China was about 900,000. On the other hand, there were around 25 million visitors in mainland China in the year 2016 (Dong et al., 2017). Those opportunities come along with pressure and expand advanced financial services to the very people to improve their quality of time in China by making them feel comfortable and secure when they deal with the mobile payment system (Tampuri, Kong and Asare, 2019).

The People's Republic of China as the world's largest digital retailing market deserves special attention to understand its dynamics in the commercial landscape and its financial inclusion mechanism. Adequate managing online store that hasten consumers' satisfaction through mobile payment technology is a crucial factor not only for the diversified source of income but also for the sustainable growth of the economy. The proliferation of online shopping has stimulated widespread research to attract and retain consumers from either a consumer or a technology-oriented view (Delafrouz et al., 2009). Customer's satisfaction of online payment stores is directing to a positive outcome like trust, satisfaction (Fassnacht and Köse, 2007), customer referral, retention, e-shopping stickiness, online conversion (Ranaweera et al., 2008), and online loyalty (Anderson and Srinivasan, 2003; Fassnacht and Köse, 2007; Chiou and Chang, 2009). Although the number of foreigners in China is not significant considering the size of the nations' population, they are an important link and technology transfer between China and their respective countries. Thus,

they need to have access and usages of advanced digital financial services, including mobile payment, without security concerns. They must undertake their day-to-day activities, make and receive payments, and stay connected and productive (Tampuri et al., 2019). The objective of this study is to investigate if foreigners living in China have security concerns when they are dealing with the mobile payment system and if there is a significant change in their consumption trend post-adoption of the m-payment system. Despite the wide varieties of studies directing mobile payment adoption intentions, there are limited (if any) studies connecting those dual objectives. This study's' outcome is not mainly to understand the security perceptions and concerns of foreigners residing in China but also to contribute useful insights into how money representation might affect consumption behavior.

As a base theory, the current study applies Davis's technology acceptance model (TAM) (Davis 1989). This theory is reputable for its expressive power in explaining Information System (I.S.) adoption behavior in the previous studies. But several empirical works have found that TAM only explains a specific portion of the variance related to usage intention and action (Venkatesh and Davis, 2000). Therefore, the present research extends TAM's model by including two central determinants of security-related constructs and one post-adoption construct. The aim is to emphasize how those constructs could affect the decision to adopt and how those determinants change users' spending behavior over time.

## LITERATURE REVIEW AND HYPOTHESIS FORMATION

### Foreigners and Financial inclusion in China

According to the United Nations, financial inclusion is a financial system that efficaciously and comprehensively serves all social groups and classes (Runnemark et al., 2015). Fungacova and Weill (2014) define financial inclusion as the dissemination of conventional financial services to a vast population and the access to and use of financial products and services. Proxies of measuring the degree of financial inclusion could be more and sophisticated. But it could be defined as simple as the accessibility and usable of financial services by customers. When specific categories of society are excluded from this standard financial service and product, it could be referred to as financial exclusion (Hannig and Jansen, 2010). Mobile payment system technology, like any other cluster of financial products, needs to be inclusive. For example, in a report issued by a study from the Institute of Digital Finance of Peking University in 2019, the digital inclusive finance index increased from 46.9 in 2011 to 226.6 in 2018; increase of 383.2 percent since 2011.

This surge in Digital finance has created better

economic progress and improved the living standards for most local people. Suppose we are devoted to understanding international communities' perceptions towards a mobile payment system in China, the first thing needed to know is that if they do even have access to that technology. In the previous studies, it can be observed that the degree of financial inclusion and its access for foreigners in China is better (Dong et al., 2017; Tampuri et al., 2019). The foreign community in China can be considered as beneficiaries of financial inclusion. They have access to basic banking services, and in general, they claimed they are satisfied with the service (Tampuri et al., 2019). This immediate access is crucial for the experts, as it is the root of the various digital financial products and directly linked to the mobile payment system.

### Technology adoption

Mobile payment is an electronic process in which a smartphone device and cellular phone communication techniques are utilized to initiate, authorize, or make payments (Pousttchi and Wiedemann, 2007). The procedure is, in essence, an information technology (Becker and Pousttchi, 2012). However, it is worth addressing that nearly 25 percent of the world's population is only active users of online shopping. It indicates that the majority of the world population does not have access to it. More specifically, most of the foreigners coming to China are new to the technology. Understanding their perceptions and security concerns toward accepting this technology, thus, become imperative. When new information technology is diffused to the public, an individual's perception regarding the utilization of technology becomes crucial since it is one of the ultimate reasons behind an individual's acceptance (Rogers, 1985; Moore and Benbasat, 1991).

A wide variety of theories are proposed to determine what attributes of innovation consistently influence adoption by individuals (Moore and Benbasat, 1991). Researchers employed acceptable and widely established behavioral models such as Theory of Planned Behavior (TPB) (Ajzen, 1991), Decomposed Theory of Planned Behavior (DTPB) (Taylor and Todd, 1995); Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) and models concerned with technology acceptance including Technology Acceptance Model (TAM) (Davis, 1989), TAM2 (Venkatesh and Davis, 2000) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) mainly to curve the perception of individuals in adoption innovation. In this study, we focus on Davis's Technology Adoption Model (TAM) as it has been extensively used in previous information technology system-related researches to explicate users' adoption intention (Dahlberg et al., 2003).

Although TAM was initially applied to study work-related I.S. activity, the theory is still very relevant for

other IS-related studies. It has been successfully implemented in various non-organizational contexts, including several mobile commerce scopes (Pousttchi and Wiedemann, 2007). While individual innovation adoption is believed to be necessary, the smartphone owner's intention to utilize the mobile payment system is of vital interest to researchers and practitioners. Based on previous literature works, we construct the conceptual framework of attributes that consistently influence mobile phone owners' decisions to adopt mobile payment systems. We are using the following characteristics as factors that always influence mobile phone owners' decision to adopt the online shopping system.

### Perceived usefulness and perceived ease of use

Technology Acceptance Model (TAM) by Davis (1989) is among the well-known behavioral models often used to examine the intention of adopting technology by individuals. TAM model hypothesizes that perhaps the behavioral intentions of a person to embrace technology are defined by two conceptions, perceived usefulness and perceived ease of use. The former is related to the degree to which an individual believes that adopting the system will boost their activity performance (Becker and Pousttchi, 2012). While perceived ease of use is defined as the extent to which a person believes that to adopt the system will be effortless (Venkatesh and Davis, 2000). Since its establishment, TAM has become a deep-seated, resilient, influential, and pioneering model for user acceptance predictions (Venkatesh and Davis, 2000). In line with that, we are using the two essential TAM attributes as part of the reason to adopt the mobile payment system.

Moreover, we hold TAM's preposition of perceived ease of use to be a positive factor determining intention to use a technology (Davis, 1989). As all else being constant, the less troublesome a system is to operate, the higher tendency to use it. Considerable empirical evidence summed over the last decades proves that perceived ease of use significantly affects adoption intention (Davis, 1989; Venkatesh and Davis, 2000). Therefore, we hypothesize:

H<sub>1</sub>: Perceived usefulness is directly associated with the adoption intention of using mobile payment systems among foreigners living in China.

H<sub>2</sub>: Perceived ease of use is directly associated with the adoption intention of using mobile payment systems among expatriates living in China.

H<sub>3</sub>: There exists a positive effect of Perceived ease of use on perceived usefulness of m-payment among foreigners living in China.

### Perceived security and privacy

Several empirical works have found that TAM's dual

central belief attributes of perceived usefulness and perceived easiness explain only a certain portion of the variance related to usage intention and behavior (Venkatesh and Davis, 2000; Moon and Kim, 2001). Thus, numerous researchers are trying to include other attributes. Factors like, "Perceived playfulness" (Teo et al., 1999; Moon and Kim 2001), "Product involvement and perceived enjoyment" (Koufaris, 2002), "Computer self-efficacy" (Ilgbaria and livari, 1995; Chau, 2001; Hong et al., 2002), "Personal innovativeness" (Agarwal and Karahanna, 2000), "Social factors" (Hsu and Lu, 2004) and "Perceived information quality" (Shih, 2004). Several studies have also explained "Trust" as an additional variable to the Internet shopping (Gefen et al., 2003) and e-Government contexts (Teo et al., 2008) that can determine an individual's technology acceptance intention. Yet, it is noteworthy to understand that not all of the criteria matter equally to all users.

Notably, since one of our main objectives is to investigate if foreigners living in China have security concerns when they are dealing with mobile payment, we narrowed our focus only on the two ascendants of securities. A substantial component of m-payment adoption is the perception of subjective security (Becker and Pousttchi, 2012). The 'Perceived Privacy of information' and the 'Perceived trustworthiness are the most iterative applied explanatory factors when the subjective security in the literature has been studied in the case of m-commerce (Dong et al., 2017). In our model, we will integrate the work of Dong et al. (2017) to tackle foreigners' perception of the security concern of mobile payment. Kreyer et al. (2003) classified the security concern into two dimensions, objective and personal security. Due to the technical characteristics of objective security and average consumers are unable to evaluate it (Becker and Pousttchi, 2012), in this study, we will focus on subjective security as it is a measure of consumers' perception. Becker and Pousttchi (2012) define subjective security as "The degree to which a person believes that using a particular mobile payment procedure would be secure." Security issues, whether they are objective or subjective, are primary barriers to mobile payment acceptance. Gefen et al. (2003) analyze mobile payment adoption barriers and conclude concerns of subjective or immanent security are the most frequent causes of denial. Moreover, Pousttchi (2003) postulates that a violation of subjective security would block users from utilizing a specific procedure. Previous literature had contributed to craft attributes that explain subjective security characteristics (Linck et al., 2006).

### **Perceived confidentiality (P.C.)**

Koufaris (2002) defines privacy as the characteristics of an information technology system that assures restrict access to the intended authorized persons only. It can be

made by using unique encrypted codes for each information. Confidentiality of information is by far proved to be the most crucial adoption attribute for mobile payments (Pousttchi, 2003) as consumers' biggest concern could be the invasion of their privacies and financial data. Therefore, it is natural for foreigners to be skeptical about their data confidentiality, particularly when they do not understand the whole mobile payment system laws and regulations in a host county. Thus, they need to be confident about their payment details safety if they have to accept the m-payment system. Therefore, we hypothesize:

H<sub>4</sub>: Perceived confidentiality will positively impact the intention to use m-payment system among foreigners living in China.

### **Perceived trustworthiness (P.T.)**

Trust is a multi-factorial belief and user expectations when they consider privacy, security, acceptable norms, social influence, and efficaciousness (Grandison and Sloman, 2000). Trust as the explanatory variable is observed frequently with the numerous technology adoption models (Dong et al., 2017). Consumers' trust in the m-payment service provider is an essential determinant of his attitude towards the company, which eventually will lead to the notion of faith in the company. Dong et al. (2017) stated that "perceived privacy of information and the security is most iteratively used independent variables when the security in the literature has been studied in the case of m-commerce" (Dong et al., 2017 p.190). Concerning the perception of trust in the service provider, several different characteristics that trigger consumers' trust can be identified. The company's integrity, benefaction, competence, and reputation are among them (Mayer et al., 1995, Chandra et al., 2010). To contextualize the concept of trust, the perceived mobile payment service provider's trustworthiness represents the perception of the consumer's confidence in the system. It is expected that a belief in the distinct traits of the service provider will affect consumers' intention to use the mobile payment service. Therefore, we hypothesize:

H<sub>5</sub>: Perceived Trustworthiness will positively affect the intention to adopt the m-payment system among foreigners living in China.

Furthermore, perceived confidentiality and perceived trustworthiness are expected to influence each other (Hampton-Sosa and Koufaris, 2005). If consumers assume that a particular service provider is equipped with the essential technology to save their transaction and other private data from unauthorized access, they can feel secure. This feeling of security may enhance their

trust in the service provider. Say it differently; any consumer will use a mobile payment that he/she perceived as secure and provided by a trustworthy company. Therefore, it can be hypothesized as:

H<sub>6</sub>: There exists a positive relationship between perceived confidentiality and perceived trustworthiness concerning the m-payment system.

### Post adoption consumption perception

Unlike the classical economic thoughts, where consumers' valuation of goods and services are independent of the payment form or money representation, scholars find out the payment method itself does affect spending (Runnemark et al., 2015). Moreover, researches based on natural circumstances also provide similar patterns relating to spending behavior associated with different payment scenarios. Although there is no theoretical account of such temporal shifts, researchers also found that accepting mobile payment systems is related to increased shopping motives (Xu et al., 2019). In this paper, therefore, in minimal scope, we took a glance into foreigners' perceptions about their spending behavior after they adopt the m-payment. Consequently, we hypothesize:

H<sub>7</sub>: Mobile payment system adoption is negatively affecting the spending behavior of foreigners living in China.

### METHODOLOGY

We attempt to examine our theoretical model, and the hypotheses discussed above through self-administrated online surveys. This research's conception was a correlation design conducted on foreigners living in China. The entire instruments employed in this research are developed by discovering appropriate proxies from an extensive literature review. We adopt proxies of Perceived Usefulness and Perceived Ease of Use from Davis (1989), Perceived Confidentiality from Rammile and Nel (2012), Perceived Trustworthiness from Jarvenpaa et al. (2000), and Schneider et al. (1998), Intention Adopted from Davis (1989), Venkatesh and Davis (2000), and Post-Adoption Consumption Perception from Kelly et al. (2010). All of the adopted measurements are contextualized and modified to fit this study. Using scale measurements from prior studies has the advantage of well validating measurement scales, which then can only be assessed in terms of validity and reliability. We employed the PLS– structural equation model using statistical tools SmartPLS3 software package to test our hypothesis and model comprehensively.

### Sampling and data collection

The data were gathered via an online survey. It was arranged according to our specifications. Each item was measured on a five-point Likert scale from strongly disagrees to strongly agree. Pilot testing was conducted with 23 international Ph.D. students who are extensive users of mobile payment. Based on their responses, few

questions were rephrased to make them explicit. The pilot test verified the proxies used to measure each construct and are valid to have an internal consistency with Cronbach's alpha of greater than 0.70. Our sample population includes all foreigners living in the People's Republic of China and who are users of the mobile payment system. Following the pilot testing, we distribute the self-administrated online-based structured questionnaire survey to different international community WeChat groups living in China. Even though we managed to collect 236 responses, we consider 227 responses for final analysis due to replies' completeness and integrity.

### Empirical analysis

#### *Descriptive statistics of the demographic analysis*

In the demographic aspect of the collected sample (Table 1), it is observed that most of the foreigners in P.R. China are youths within the age range of 25-40. The collected sample is dominated by male respondents (74.5%), and all of the respondents are highly involved in the mobile payment system. Simultaneously, almost all of the respondents are students (96.5%), with most postgraduate (72.2%). Concerning time duration, nearly half of them (45%) stay between one and three years and with almost equal percentage for those who stay for less than one year and those who stay for more than three years. It indicates that respondents have significant experiences with mobile payment systems, and their response could be reasonably convincing (all considered respondents are actively using mobile payment).

#### *Measurement model*

PLS-SEM consists of two steps to complete the analysis, first measurement model testing, and then structural model analysis. Hence, before the structural model analysis, we evaluate the proxies of the constructs for reliability. It is not uncommon to find the measures to have adequate internal consistency as they are already tested and adopted from works of literature. Thus, all the items showed a Cronbach's alpha levels above 0.8. Part of the measurement model analysis is the test for content validity and convergent validity. Following the recommendation of Anderson and Gerbing (1988) and Hair et al. (1998), we address the measurement model's convergent and divergent validity through confirmatory factor analysis. Our sampling number was satisfactory as the adequacy measure (Kaiser-Meyer-Olkin) is 0.846, an excellent confirmatory value to perform factor analysis. The items employed in this study showed a loading of more than 0.5 or higher, as shown in Table 2.

The significantly higher loading value of the items within each factor variable implies a strong direct association with the latent construct (Anderson and Gerbing, 1988). Thus, the principal components analysis results in a strong construct validity with a Composite value (C.R.) above 0.70. (Fornell and Larcker, 1981) recommended AVE with a score of 0.5 as a threshold measurement for convergent validity. As seen in Table 2, the AVE points spread from 0.61 to 0.81, which are adequately above the threshold values.

Computing the AVE's square root is used as a verification method for the discriminant validity of the constructs (Fornell and Larcker, 1981). When the computed values are higher in each of the inter-construct correlation as compared to the variance divided with the other variables in the model, they indicate a higher degree of variance and confirm discriminant validity. The result, shown in Table 3, affirms the discriminant validity of the variables. This trend of high validity and reliability is coherent with many former studies (Davis, 1989; Taylor and Todd, 1995; Venkatesh and Davis, 2000).



**Table 1.** Demographics profile of respondents.

| Demographic Variable | Category     | Frequency | Percent |
|----------------------|--------------|-----------|---------|
| Gender               | Male         | 169       | 74.4    |
|                      | Female       | 58        | 25.6    |
| Age (years)          | 25-30        | 101       | 44.5    |
|                      | 30-40        | 116       | 51.1    |
|                      | >40          | 10        | 4.4     |
| Education            | Graduate     | 63        | 27.8    |
|                      | Postgraduate | 164       | 72.2    |
| Duration (years)     | <1           | 65        | 28.6    |
|                      | 1-3          | 102       | 44.9    |
|                      | >3 Years     | 60        | 26.5    |
| VISA type            | Student      | 219       | 96.5    |
|                      | Employee     | 5         | 2.2     |
|                      | Others       | 3         | 1.3     |

Source: Author's work.

**Table 2.** Reliabilities, validities and VIF.

| Constructs                           | I.C. | F.L.  | Alpha | CR    | AVE   | VIF   |
|--------------------------------------|------|-------|-------|-------|-------|-------|
| Perceived usefulness                 | U1   | 0.898 | 0.922 | 0.950 | 0.811 | 2.486 |
|                                      | U2   | 0.920 |       |       |       | 3.363 |
|                                      | U3   | 0.814 |       |       |       | 2.641 |
| Perceived ease of use                | E1   | 0.914 | 0.791 | 0.830 | 0.710 | 1.225 |
|                                      | E2   | 0.690 |       |       |       | 1.018 |
|                                      | E3   | 0.674 |       |       |       | 1.216 |
| Perceived confidentiality            | PC1  | 0.676 | 0.808 | 0.820 | 0.610 | 1.646 |
|                                      | PC2  | 0.668 |       |       |       | 1.619 |
|                                      | PC3  | 0.984 |       |       |       | 1.254 |
| Perceived trustworthiness            | PT1  | 0.863 | 0.915 | 0.940 | 0.798 | 2.281 |
|                                      | PT2  | 0.921 |       |       |       | 3.830 |
|                                      | PT3  | 0.888 |       |       |       | 3.033 |
|                                      | PT4  | 0.904 |       |       |       | 3.416 |
| Adoption Intention                   | I1   | 0.850 | 0.857 | 0.910 | 0.777 | 2.078 |
|                                      | I2   | 0.913 |       |       |       | 2.776 |
|                                      | I3   | 0.881 |       |       |       | 2.045 |
| Post adoption consumption Perception | P1   | 0.786 | 0.811 | 0.890 | 0.725 | 1.633 |
|                                      | P2   | 0.908 |       |       |       | 2.600 |
|                                      | P3   | 0.868 |       |       |       | 1.976 |

Source: Author's work.

**Structural model**

Being successfully validating and verification of the constructs of

the model, we check the variance inflation factors (VIF) to make sure that the constructs are free from multicollinearity. A VIF value for each variable turns out to be less than 5, a good indicator of

**Table 3.** Discriminant validity.

| Construct | AI           | PC           | PEOU         | PACP         | PT           | PU           | Model Fit    |
|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| AI        | <b>0.882</b> |              |              |              |              |              |              |
| PC        | 0.191        | <b>0.790</b> |              |              |              |              |              |
| PEOU      | 0.469        | 0.179        | <b>0.767</b> |              |              |              |              |
| PACP      | -0.256       | -0.029       | -0.066       | <b>0.855</b> |              |              |              |
| PT        | 0.343        | 0.674        | 0.273        | -0.085       | <b>0.894</b> |              |              |
| PU        | 0.565        | 0.258        | 0.626        | -0.240       | 0.401        | <b>0.879</b> |              |
| SRMR      |              |              |              |              |              |              | <b>0.077</b> |
| NFI       |              |              |              |              |              |              | <b>0.774</b> |

AI: Adoption Intention, PT: Perceived trustworthiness ; PC: Perceived confidentiality, PU: Perceived usefulness; PEOU: Perceived ease of use; PACP: Post adoption consumption perception; The numbers in bold of the diagonal row are the square roots of the average variance extracted.

Source: Author's work.

**Table 4.** Path coefficient results.

| Hypothesis | Paths      | Beta        | T-stat | P-Values | Result        |
|------------|------------|-------------|--------|----------|---------------|
| H1         | PU -> AI   | 0.400***    | 3.783  | 0.000    | Supported     |
| H2         | PEOU -> AI | 0.178*      | 2.113  | 0.035    | Supported     |
| H3         | PEOU -> PU | 0.625***    | 11.991 | 0.000    | Supported     |
| H4         | PC -> AI   | (0.107)     | 1.648  | 0.099    | Not Supported |
| H5         | PT -> AI   | 0.198**     | 2.562  | 0.010    | Supported     |
| H6         | PC -> PT   | 0.625***    | 11.060 | 0.000    | Supported     |
| H7         | AI-> PACP  | (0.255) *** | 3.212  | 0.001    | Supported     |

\*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01; AI: Adoption intention, PT: Perceived trustworthiness, PC: Perceived confidentiality, PU: Perceived usefulness, PACP: Post adoption consumption perception, PEOU: Perceived ease of use.

Source: Author's work.

**Table 5.** Path coefficient results without perceived usefulness.

| Hypothesis | Paths      | Beta       | T-stat | P-Values | Result        |
|------------|------------|------------|--------|----------|---------------|
| H2         | PEOU -> AI | 0.403***   | 5.134  | 0.000    | Supported     |
| H4         | PC -> AI   | (0.098)    | 1.345  | 0.179    | Not Supported |
| H5         | PT -> AI   | 0.291***   | 3.950  | 0.000    | Supported     |
| H6         | PC -> PT   | 0.626***   | 11.224 | 0.000    | Supported     |
| H7         | AI-> PACP  | (0.257)*** | 3.212  | 0.001    | Supported     |

\*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01. Post-hoc Analyses has no direct link from PU to AI; Key: A.I.: Adoption Intention, P.T.: Perceived Trustworthiness, P.C.: Perceived Confidentiality, PACP: Post adoption Consumption Perception PEOU: Perceived Ease of Use.

Source: Author's work.

multicollinearity free variables (Table 2). Following the proxy models' confirmation, the intended structural model was examined using the partial least squares (PLS) method. PLS has several advantages relative to the other structural equation model techniques. It requires a minimum sample size demand, measurement proxies, and residual distribution (Teo et al., 2008). Table 3 shows the measures of overall goodness-of-fit for the research model. Based on the rules of thumb set by Hair et al. (2019) for a model fit index, it can be considered that the

hypothesized model fits acceptably with the observed data.

The standardized path coefficients for six of the proposed research models are shown in Tables 4 and 5. In general, six out of the seven proposed hypotheses in this study were statistically supported. As the percentages of variance explained by the model (32.1%) are greater than 10%, this is a satisfactory and significant model (Hair et al., 1998). Coherent with many previous pieces of researches and particularly with TAM theory, in this study, perceived usefulness is found to be a strong determinant of

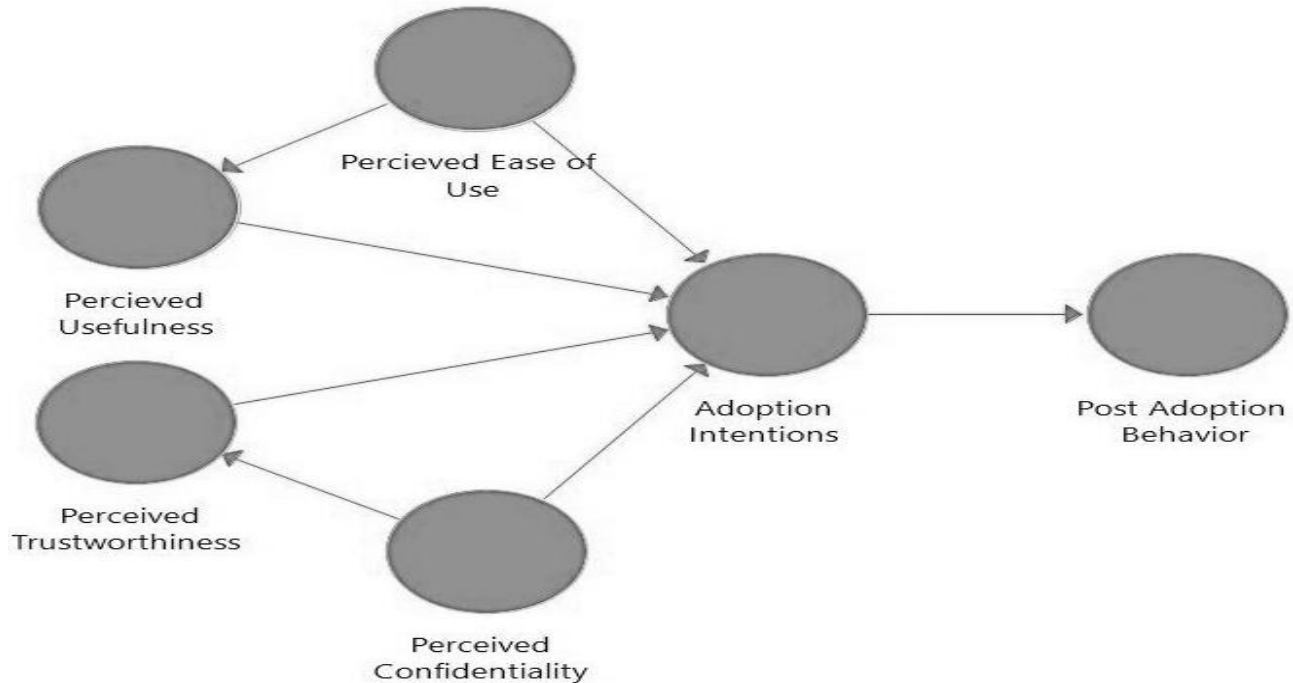


Figure 1. Study model.

adoption intention with a beta of 0.39,  $R^2$  of 32.7% at  $P < 0.01$ , and perceived ease of use with beta 0.184,  $R^2$  of 15.8%, at  $P < 0.05$  is a significant secondary determinant. The result validated the strong direct relationship between perceived usefulness and perceived ease of use with a beta of 0.626 at  $p < 0.01$ . Thus, the first three hypotheses, H1, H2, and H3, are supported. We run a separate mediation analysis without the construct perceived usefulness, to check if it mediates perceived ease of use (Figure 1).

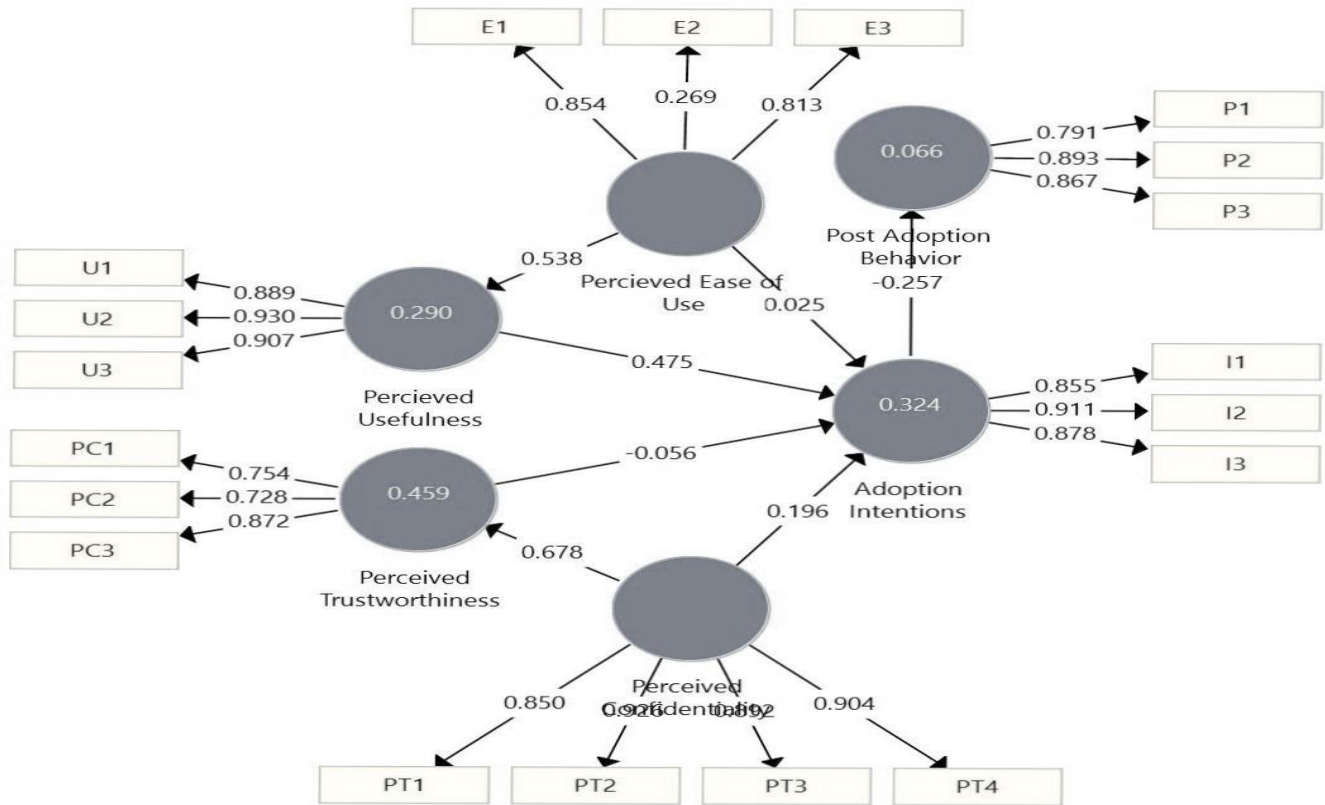
Based on the result of this analysis (see Appendix A), we found that PU partially mediates PEOU as the path coefficient becomes strongly significant. This result is consistent with Davis (1989)' argument that perceived ease of use might indirectly influence intentions to adopt a specific technology through usefulness. Assessing the dual subjective security, building blocks in adopting mobile payment technology, we find that perceived trustworthiness is a significant determinant factor of m-payment adoption intention with beta 0.175 at  $p < 0.05$  and hence supported the prediction of H5. This is in sync with the results of Dahlberg et al. (2003) surprisingly enough; however, unlike the products of Pousttchi (2003) and Pousttchi and Dehnert (2018), Perceived Confidentiality has shown to have a negative beta but statistically insignificant factor on the adoption of mobile payment system among foreigners in China. Thus, the result rejects H4. Nevertheless, in line with our prediction of a positive relationship between perceived confidentiality and perceived trust, the study reveals a strong positive correlation between those two antecedents of security with  $\beta = 0.625$  and  $p < 0.01$ ; hence H6 is supported.

The final set of analyses analyzes the important negative impact of the adoption of the mobile payment system on users' consumption behavior. Based on the assessment result, adoption intention and actual usage have a negative and significant determinant on foreigners' post-adoption consumption perception with beta -0.255 and  $p < 0.05$ . Even though the variance explained by AI toward PACB is very low (6.6%), H7 is still supported (Figure 2).

## DISCUSSION

The trend of e-commerce in China is increasing exponentially. In 2019, for example, online retail sales were expected to swell to \$1.5 trillion, representing a quarter of China's total retail sales volume and more than the retail sales of the ten next largest markets in the world (Bu et al., 2019). The increasing number of experts living in China also marks that foreigners will also actively engage in the nation's m-payment system. Almost all respondents are active users of the m-payment system. To this effect, the need to secure financial inclusion and subsequent subjective security of the system becomes imperative.

This empirical study is orbiting around the whim of mobile payment system technology related to foreigners living in China. While one side of the study investigates the impact of subjective security concerns in adopting m-payment system, the other is allotted to taking an insight into the aftermath of adopting the technology in influencing their consumption perception. TAM has been considered as a desirable user adoption model to assess' Mobile payment. Nevertheless, many scholars agreed that it needs to expand and be customized to adhere to specific characteristics. Based on this relic, we formulate the study's structure based on the constructs from the TAM model (Davis, 1989) with two subjective security proxies constructs of trust and confidentiality (Gefen et al., 2003; Pousttchi, 2003). On the other hand, we employed perceived alternation in consumption behavior constructs



**Figure 2.** Study model path coefficients results. Source: Author's frame work.

to get insight into mobile payment users' perception of their spending behavior.

Consistent with previous major studies of technology acceptance, Perceived Usefulness and Perceived ease of use have a significant positive impact on intentions to adopt mobile payment technology among foreigners living in China. Moreover, this study added additional carapace to the literature pool towards the strong correlation between perceived usefulness and perceived ease of use towards mobile payment adoption intention. The above section's empirical outcome shows that one of the two antecedents of subjective security, perceived trustworthiness, is a robust significant determinant factor in mobile payment adoption. The Chinese Government's strict rules and regulations in controlling the system might deliver them the confidence to trust the system. The more they trust the system, the more foreigners likely will adopt it. The outcome is harmonious with many studies in the context of the mobile payment system. This implies that foreigners as potential users consider the service providers' trustfulness who intended to use the system. This trust can be achieved by checking the system providers' reputation and brand name as they are essential building blocks of faith.

On the other hand, this empirical study indicates that Perceived confidentiality is not a significant subjective security component factor in the context of mobile payment system adoption for foreigners living in China. This result is strange and plausible, as many previous studies confirm it as a significant factor. Despite our trial by running a separate post hoc analysis to investigate if perceived confidentiality might fully be mediated by perceived trustworthiness to adopt intention, the result is not significant. It can be arguable that the majority of the respondents are international students with limited data risk exposure and financial transactions. This might lead them to the notion of "nothing to lose" sentiment. Thus, for them, confidentiality is not as strong as the other factor when dealing with mobile payment.

An important and fascinating finding that emerged was the negative effect of mobile payment system adoption on users' consumption behavior. Several studies confirm that keep other factors constant, payment methods, or how the money represents affect consumers' consumption intentions (Chae and Kim, 2004; Ghose et al., 2013; Xu, 2017; Xu et al., 2019). This paper supports the notion of the impact of money representation in consumption intention. In line with this conclusion, from our respondents' viewpoint, their consumption trends are negatively affected by their cognitive choice to use mobile

payment technology. They claimed that technology has a part to play in increasing their impulse of spending. This trend is a favorable condition for online retailers and producers. They can utilize such information to discover and address users' requisites (in this case, foreigners) and mold their service accordingly. The mobile payment system has been operating in China for many years now. Studies like this can help to improve the system and become comprehensive. The collected result can be used to understand further foreigners' preferences and potential chokepoints in utilizing the system, including severe language constraints. Furthermore, it enables us to gain insight with the slightest scope to understand the impact of different money descriptions in reshaping spending behavior. As the number of expatriates living in China getting sour every year, analysis of outcome in each side of the theory might help discover a specific niche for improvement.

### Limitations and further research

As the present study offers some interesting contributions on both sides of the mobile payment system, it is not free from limitations. Despite the narrowed measuring criteria employed in this study; Trust, confidentiality, and post-adoption indexes are broad terms. As such, we might fail to include some important security-related constructs for predicting foreigners' intentions. Unlike in this study with only two constructs of subjective security constructs and only one construct of post-adoption behavioral changes, several Scholars (Venkatesh and Davis, 2000; Gefen et al., 2003; Pousttchi, 2003; Venkatesh et al., 2003) have been trying to describe trust, confidentiality, subjective norms as well as the post-adoption behavior antecedents with several comprehensive constructs. On this basis, our paper might suffer from the fact that other possible factors might influence the variance.

Furthermore, the entire population of the study is foreigners with different backgrounds of cultural and technological experience. Ignoring these cross-cultural demographic effects might have a certain biased impact on the result of this study. Therefore, a replication of this study with comprehensive constructs might be necessary to investigate the issue. In conclusion, this result can further extend by making a meaningful comparison toward micro and macro payments to get a full picture, especially on the debate of money representation form and its impact on consumption intention.

Finally, it is noteworthy to point the gender demography in this study. As can be seen from Table 1, male participants are dominant in the sample population. Despite our attempt to be inclusive, most foreigners who come to China for numerous reasons are males. Such dominance was also seen in other previous papers that focused on foreigners in China (Dong et al., 2017; Yama et al., 2019). Using a gender dummy would have been easy to track if there is a significant difference in security

perception among male and female users. Hence, a further study that considers gender differences could give a better picture.

### CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

# **Transformative thinking for business leaders in the 21st Century**

**Allan Doyle Mududa Bukusi**

Africa Leadership and Social Development Center, Kenya.

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**This paper explores how business leaders can use transformative thinking to successfully facilitate corporate transformation in the 21st Century. The author explores the principles of transformative leadership put forward by published authors alongside the challenges of ensuring a business remains sustainable in a dynamic environment. The paper lays the groundwork for empirical research on transformative thinking and corporate transformation as a base for the development of sustainable business policy and organization development strategy. The author argues that business leaders have the responsibility to ensure their organizations stay attuned to the operating environment without losing focus in serving the needs of an evolving customer base. The article challenges business leaders to engage transformative thinking as a way of generating superior, non-traditional outcomes and creating a paradigm shift in organization performance.**

**Key words:** Transformative thinking, transformative leadership, business leadership, corporate transformation, 21st century leadership.

## **INTRODUCTION**

The 21st Century opened with great plans for global transformation. The United Nations launched the global SDGs (United Nations, 2015), while Africa launched a 50-year transformative agenda (African Union Commission, 2015). Many countries also launched transformative national visions statements. However, global economic challenges followed in quick succession (UNCTAD, 2010). The American economy took a severe downturn, waves of political unrest swept Arab countries, China rose to a new level of economic dominance, BREXIT in Europe followed by the COVID-19 health pandemic (World Health Organization, 2020). The World Bank predicted that Africa is facing its first recession in 25 years (World Bank, 2020).

But why do business leaders need to be transformative thinkers? The short answer to that question is that the environment is transforming, therefore business leaders need to adopt new thinking to keep pace with change. Business leaders need to develop and apply transformative thinking as a skill to steer business through the disruptive changing environment to deliver transformative goals demanded by shareholders and stakeholders alike (Montuori and Fahim, 2010). The demands made on business leaders in the 21st century are much broader than posting a profit at the end of the year. Businesses have also had to adjust to shorter planning periods as social change has been accelerated by paradigm shifts in technology, education and ethica

Email: [allanbukusi@gmail.com](mailto:allanbukusi@gmail.com). Tel: +254-715-201-535.

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concerns about leaders and leadership (Caldwell et al., 2012). Nature calls business leaders attention to climate change, plastics bans, pollution and environmental degradation. Businesses used to be concerned about shareholders, but are required to comply with stakeholder demands today. In other words, the 21st century business environment has placed increasing responsibility on business leaders to provide leadership for the advancement society alongside making a profit for shareholders (Sanchez, 2015). Business leaders, therefore, are not only expected to run profitable business, but also oversee corporate transformation to ensure the sustainability of the business (Howell, 2016). It is not enough for business leaders to simply conduct Strengths, Weakness, Opportunity and Threat (SWOT) analysis of their business and enter a market where they have a competitive advantage. Leaders need to reflect much more on the Political, Economic, Social, Technology, Environmental and legal (PESTEL) constraints in order to successfully and sustainably navigate environmental change (Montgomery, 2013). In this article, the author argues that for a business to survive in a continuously transforming environment, it must also undergo continuous corporate transformation to keep pace with changing environmental conditions. Business leaders need to be bold, creative and futuristic, but also need skills to make astute business decisions as there is little, if no room, for competitive errors (Kim and Moubourgne, 2004).

To help develop “thinking” as the core value proposition of this paper, James Allen provides us a philosophical foundation of its generative significance, “As a man thinketh in his heart, so is he” (Allen, 1903). This famous quote captures the power of the mind to create, re-create, co-create and generate value through the process of thought. The more popular use of the phrase gives emphasis to the need to think, give attention to thinking and spend time in deep thought over issues of concern. The popular focus is on “thinking” rather than “creating”. However a lot of time and energy is spent thinking over issues for modest and not so imaginative outcomes. While thinking is a general term, there is a difference between reflecting, ruminating and anxiety sponsored worry (Hoyer et al., 2009). Businesses need to work out how to better spend thinking time than using frustrating hours in meetings, long days in workshops and weeks in crisis retreats with less than inspiring outcomes (Sloane, 2007).

However, a closer examination of James Allen’s classical sentence gives us a clue to its proper reading. Allen says, AS - a man thinketh. The emphasis here being the way a person thinks is perhaps more important than just thinking. In other words, there are several ways of thinking about things. Inevitably, some ways will be more productive while others will have frustrating lack luster outcomes. Some ways may be more creative while

others less imaginative (Coughlan, 2007). A third important observation of this seven-word sentence is the transformative power of thought. Allen concludes the sentence with, “so is he”. Either the person doing the thinking is energized, transformed and renewed by his thoughts or the person becomes the product of his impoverished thoughts. In other words, thoughts are a self-fulfilling prophesy. Thoughts have the creative competence to change the destiny of a person, define actions, determine involvement and influence outcomes even in moments of crisis (Peale, 2004). While external circumstances may not always be submissive to the designs of the thinker that does not deny the thinkers power and ethical responsibility to resolve the issues they face.

Thinking is the design part of the creative process. The second is the work that needs to be done to bring the thing you are thinking about into being. The outcome gives insight on the quality of thinking and creativity of the artist. Steve Jobs is famed for thinking differently. His rigorous design process produced unmatched Apple computer products from the 1980s through to the turn of the century (Blumental, 2012). Nonetheless the process of creating change is arduous and a heart for the job. Business leaders and institutional managers are constantly called to think and be creative, innovative and now *transformative*, on behalf of their organizations as they address the challenge of corporate transformation.

## MATERIALS AND METHODS

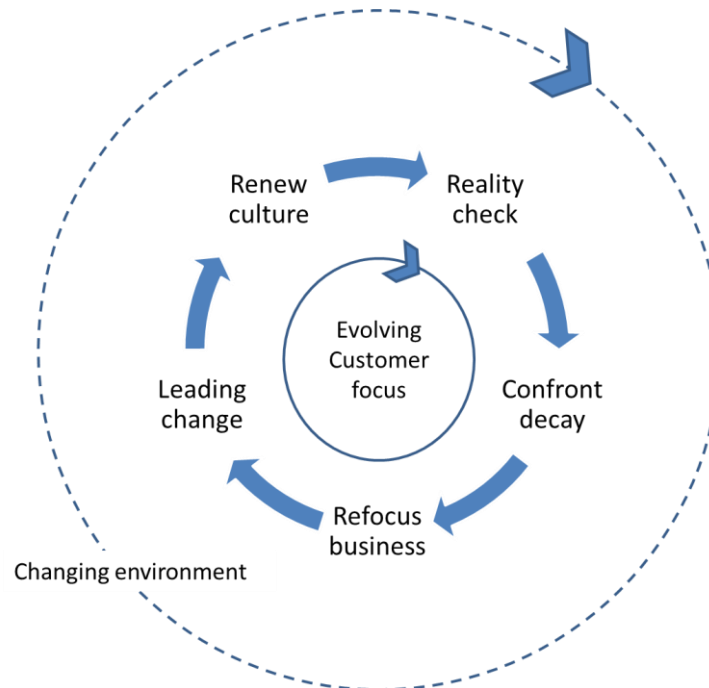
In this review, the author makes a qualitative exploratory study of scholarly literature on transformative leadership in the context of corporate transformation. The paper draws on literature published in the 21<sup>st</sup> century to ground the concept of transformative thinking as an important competence to navigate market conditions, think differently, make sustainable innovative, unprecedented decisions, shake up organization resources and synthesize business strategy to survive seasons of crisis. The study was limited to transformative leadership theory and did not review or compare the contribution of other leadership practices, styles or approaches to business transformation. The review thus provides ground work on which further research can be conducted to establish the efficacy of this model through empirical research studies. Nonetheless, the study also challenges researchers to delve further into the design of sustainable business development models that will survive the challenging 21st Century environment. This review structure covers a) an introduction to the process of corporate transformation, b) the core principles and theoretical frames of transformative leadership, c) a discussion of how transformative thinking generates ideation value for decision making and resolution of environmental challenges, d) the benefits of applying transformative thinking, and e) concluding statement.

## RESULTS

### Corporate transformation

Corporate transformation is a process of renewal that





**Figure 1.** Corporate transformation conceptual framework.  
Adapted from (Bukusi, 2018, p. 17)

facilitates the long term survival, sustainability and success of an organization” within its environment through continuous evaluation of five core processes (Figure 1).

The process calls for the continuous engagement of business managers with the five key elements of conducting reality checks, confronting decay, refocusing the business on priorities and emerging opportunity, leading change and renewing its organization culture. The rationales for engaging in this process is that the customer is evolving while the environment changes.

### **Reality check**

Here leaders evaluate the business performance in the face of the ever-changing market environment and determine how these dynamics affect future business operations (Kotler, 1999). With this knowledge, managers adjust business strategy to survive market upheaval, remain competitive and create new products for new markets (Kim and Moubourgne, 2004).

### **Confront decay**

Corporation managers confront decay by offloading dead products, unproductive and decadent organization routines. They update outdated job descriptions, make

space for onboarding new ideas and maximize value returns on idle assets (Hamel, 2002, pp. 1-31). Confronting decay enables an organization to remain lean and ready to respond to environmental change. It creates new levels of efficiency and performance without carrying dead weight into the future.

### **Refocus business**

This means keeping the business focused on what it should be doing. Business integrity is about ensuring that the enterprise delivers what it promises. The goal is to maintain a business integrity quotient equal to one. Business integrity means constantly raising performance standards while building the capacity to deliver. Customers are smart enough to single out organizations that mischievously, “under promise and over deliver” in a bid to win customer loyalty.

Business Integrity = Delivery/Promise

Customer sustainability, rather than customer satisfaction is critical for continued organization success. Customers evolve and raise their expectation once their primary demands have been met. Every time a customer returns, his or her expectations have been upgraded. This means the business has to do more to sustain their evolving expectations. A business needs to have a sustainable

purpose in order to remain relevant in a market. A business that does not aim at meeting a market need is unsustainable by design (Roterberg, 2018). This means that a business needs to continuously examine its corporate goals and focus to ensure that it is aligned to meet evolving customer needs.

### **Leading change**

This requires appealing to staff to participate in business transformation - an event that never seems to end (Armstrong and Taylor, 2014). It requires restructuring and reorganizing the way things are done in the corporation to ensure more efficient and effective operations (Barine and Minja, 2010). However leading change also requires that a leader mobilize ownership and buy-in from everyone (Kotter and Cohen, 2002). As a leader you cannot get too much done if you are dogmatic, you may have to learn how to be charismatic (Low, 2010). Institutional managers tend to delegate freely, but hardly make use of follower resources. There are underutilized competent followers waiting in the wings to take leadership of organization issues, but never receive a call. Followers who step forward are often cowered into spectators, even when they have the knowhow to solve organization issues (Chaleff, 2009). Leading organization change is about drawing out, harnessing and aligning staff contributions as well as managing the balance of power dynamics between functional units. It also means constantly aligning roles and responsibility amongst staff and harmonizing interdepartmental operations (Collins, 2001).

### **Renew culture**

Culture is as much a tool in the hands of leadership as any other material resource. It is the leadership's business to maintain organization cultures, overseeing its rebirth through training, building capacity and strategic human resources development. It means challenging everyone to remain engaged as a community and striving together with a common philosophy reaching for higher goals (Ncube, 2010). Keeping an organization on course means the vision, mission and corporate values are more than statements of intent, but are alive in terms of behavior and practice (Collins and Porras, 2005). To maintain organization culture and to keep it productive, leaders track performance and do not wait for things to go wrong before they take action (McChesney et al., 2012).

### **Transformative Leadership Theory**

The object of transformative leadership is transformation.

It is driven by aspirations and results in individual, organization and environmental transformation (Montuori A., *Transformative Leadership for the 21st Century: Reflections on the Design of a Graduate Leadership Curriculum*, 2010). It is based on creating a sustainable and transcendent change in personal, business, social and environmental circumstances. Transformative leadership calls for leaders and managers to remain flexible in their approach to resolving issues. It helps managers explore all options before settling on specific direction and making sustainable decisions (Montuori and Donnelly, 2017). It draws on a leader's ability to move from the conceptualization of ideas and aspiration to material action. It mobilizes resources and support for their implementation (Langlois, 2011). Transformative leadership is called up in the development of strategy, repositioning an organization in a market or rethinking the development of new designs. The following brief review of transformative leadership theory will help managers appreciate why transformative thinking emerges as a core competence in the 21st Century.

Caldwell et al. (2012) describe a model that draws on six leadership approaches namely: Transformational leadership (Burns, 1978), Charismatic leadership ability (Bass, 1985), Level 5 Leadership (Collins, 2001), Principle centred leadership (Covey, 1991), servant leadership (Greenleaf, 2003) and Covenantal Leadership (Senge, 2006). These authors develop the concept of the leader as the hero, giving examples of Mother Teresa, Nelson Mandela and Martin Luther King Jnr as nodes of excellence to which transformative leaders should aspire. This model requires a leader to be uniquely talented to competently engage all six spheres of leadership as required (Caldwell et al., 2012). This approach calls on leaders to embrace a transcendent altruistic sense of duty to generate sublime benefits for the organization, stakeholders and customers.

Shields discuss transformative leadership in the context of social reform, incorporating the themes of social justice, democracy and equity. The salient aspects of this model include "deconstructing" and "reconstructing" ideas and challenging conventional thinking. Shields reveal a "leader-centered" approach driven by ethical and personal values. Shields suggests that the transformative leader is a pragmatic, non-idealistic individual who is able to isolate and tackle organization issues as they are, in order to create a new inclusive future (Shields, 2011).

Langlois' work suggests that transformative leaders have to address organization culture in such a way so as to release its withheld ethical potential. Transformative leadership takes a teleological view of ethical decisions while normative practices focus on deontological rigid rules and bureaucratic procedure. In times of change, conflict and crisis, transformative leadership reflects on ethical decision-making, sensitivity to social concerns and the courage to act. However, the leader also enlists the

participation of transformative agents to advance corporate goals. It is unethical for leaders, at any level of organization, to knowingly observe corporate failure and do nothing about it. In other words, transformative leadership must be action oriented, but remain sensitive and conscious of the various contributors creating the status quo. Langlois emphasis on ethics warrants the following lengthy description; the ability to be reflective and critical in using ones skills, talent and thinking process, guided by personal, professional or organization values, having the moral responsibility to question ones' own behaviour, what values to use, the best decision to make, always taking into account how that decision will affect others. This approach to ethics is an important reminder that leaders and managers do not take arbitrary decisions simply because they are in a position of power to do so. They should act in the widest interest of public good. Nonetheless, reflective ethics is not limited to the CEO. Every member of an organization is subject to ethical responsibility (Langlois, 2011).

Montuori and Donnelly define transformative leadership at its heart as a "participatory process of creative collaboration and transformation for mutual benefit" (Montuori and Donnelly, 2017). The authors discuss a "transformative moment" as an ideal time to influence change such as during strategic planning or when a business needs to respond to a chaotic operating environment. In these situations, rules and norms are "suspended" as institutions seek new and creative ways to navigate crisis. These are opportune moments for the emergence of transformative leadership when conventional approaches may not achieve the desired new reality. However, the role of the leader in the transformative context is not housed in the position of a CEO, rather it is in giving opportunity to the expert, talented and competent to lead transformative initiatives. Thus, in matters of customer service it is the frontline officer who leads the initiative, everyone else in the organization is a follower. Transformative leadership is a responsibility that is shared and rotated to leaders who assume office for a reason and a season. Members of an organization are both leaders and followers who support each other; individually providing leadership as needed. Participation, creativity and teamwork are critical to the success of transformative initiatives. The transformative leader's job is to orchestrate a new reality through reflecting on issues, questioning traditions and routines, challenging normative thinking, embracing complexity, working with ambiguity and uncertainty guided by ethics, values and overall vision (Montuori and Donnelly, 2017).

### **Discussion of transformative thinking**

Drawing from transformative leadership theory, transformative thinking begins with an aspiration,

unresolved issue or identified problem. These situations call for individual, organization or environmental change, adjustment or transformation. In a changing environment, business leaders and institutional managers are tasked to ensure their organizations remain: (1) flexible, ready to change; (2) responsive, to internal and external stimulus; and (3) relevant to the needs of evolving customers. The normative approach to change guarantees medium term success in a stable environment. However, today's turbulent market dynamics and disruptive corporate environment means that strategy can hardly be expected to be relevant one year down the line (Faeste and Hemerling, 2016). Transformative thinking gives business leaders an edge to successfully navigate short term obstacles to achieve long term goals. Contemporary leaders and managers may have to unlearn some of the conventional and normative tendencies that have enabled their success thus far. Transformative vis-a-vis normative perspectives are illustrated in Table 1.

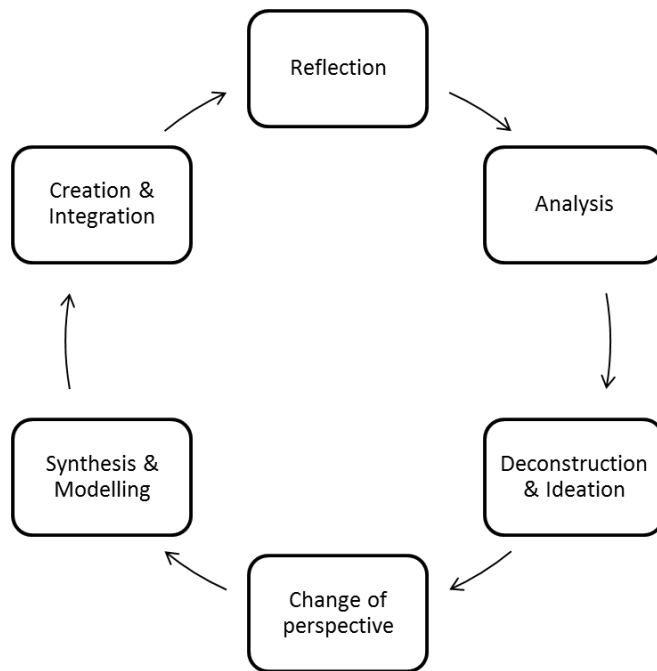
The process of transformative thinking has six critical stages. Each stage engaging a transformative mindset to facilitate unconventional actions needed to generate a new reality. The transformative mindset is a shift from a conventional or normative mindset to a growth mindset (Dweck, 2007). The transformative thinker also makes use of Gardner's disciplined, synthesizing, creating, respectful and ethical future minds (Gardner, 2008) to think differently. Transformative thinkers generate new sustainable change using six steps that blend into each other as illustrated in Figure 2.

### **Reflection**

Reflection is a powerful means of evaluating and allowing the brain to compute its own understanding of the issues at hand generating solutions from past experience, expertise, exposure and education. This process is often mistaken as being sedentary or doing nothing in today's action-oriented world (Montuori, 2010). While meditation may fall into the category of quiet reflection, reflection requires ruminating, questioning, critique (not criticism) and evaluation that are not primarily aimed at fixing the problem, but rather trying to establish an understanding of the issues at hand. Reflection seeks to understand what happened before attempting to do anything about it. Contemporary leaders and managers often rush to provide solutions without any significant reflection on the issues that have contributed to the current circumstances. An understanding of the foundations of an issue holds keys to a way out of crisis (Langlois, 2011). Careful reflection, at the very least, ensures that past mistakes are not repeated in the rush to create a practical solution. However, the challenge is always to develop the capacity to sit still, think and reflect using the power of the mind, consultation and research to gain sufficient

**Table 1.** Normative vis-a-vis Transformative perspectives.

| <b>Normative perspective</b>           | <b>Transformative perspective</b>                  |
|--|--|
| Methods focus                          | Outcome oriented                                   |
| Thinks Inside the box (fixed paradigm) | Thinks without a box (explores multiple paradigms) |
| Practicality – solution oriented       | Possibility – exploratory in nature                |
| Development oriented advancement       | Takes advantage of emerging opportunity            |
| Incremental growth                     | Exponential repositioning, quantum leap            |
| Conservative, contemporary             | Creative, innovative, imaginative                  |
| Preserving, controlling                | Empowering, renewal, regeneration                  |



**Figure 2.** Transformative thinking.

understanding to address the matter at hand. Nonetheless, it is a skill that can be learned (Sorkin, 2016). XYZ bank, in an effort to give the impression that it was up to date with global TQM trends, rushed to put up a sign that read, “Customers will be served within five minutes”. It did not take a week before the manager’s office was inundated with demands for services according to the banks promise. The sign was quietly taken down as the bank went to work on its service delivery systems (Mohanty and Lakhe, 2008). There are numerous similar stories of rushed and fumbled solutions which may have been otherwise competently resolved with a little reflection and consultation. Before discussing the next stage of the transformative thinking process, it may be important to point out that “critical thinking” and “creative thinking” gain prominence in the later stages of the transformative thinking process.

**Analysis**

A competent analysis should be an outcome of thorough reflection and understanding of a matter. However, it is possible to embark on analysis without any measure of reflection or understanding of an issue. In crisis, organizations often call for prompt “investigations” from which “recommendations” are demanded. These are swiftly followed through as solutions to solve immediate problems. These solutions turn out to be superficial, unsustainable and create new problems as shown in the case of XYZ bank above.

Analysis is more than problem solving and should employ the research mind to, a) isolate the key contributors to the current situation, and b) establish to what extent they affect the situation after a season of study and reflection (Leedy and Ormrod, 2010). A

competent analysis exercise should be able to deconstruct the crisis and reconstruct it showing a thorough understanding of how it came about (Shields, 2011). The process of reverse engineering is used to analyse and understand the functioning of a piece of equipment. However, a qualified engineer may be able to take a car apart, but lack the mechanical skills to put it back together. This leads to a condition known as analysis-paralysis. Competent analysis requires both sets of skills to deconstruct and re-construct issues. The transformative thinker does not just repair situations or put broken parts back together. The transformative thinker is looking to remodel and create a NEW model with added and superior competencies. The transformative thinker is in no great hurry to stop the crisis or solve the problem. Rather, he or she is comfortable with the chaos to the extent that it allows them to isolate its roots, understand its effects, deconstruct it and allow the construction of something new.

Transformative thinkers recognize the extraordinary opportunity the moment provides for creating something new, superior and sublime that transcends the problem and incorporates benefits that resolve future concerns as well (Blumental, 2012). The value of analysis is not in its capacity to solve a problem, but in the understanding it provides to generate a new reality, resolve surrounding issues and transform the overall state of the business. A limited use of the power of analysis leads to narrow problem solving like giving a hungry man a fish, rather than teaching the man to fish. Giving the man a fish may solve the problem - for a day. Teaching a man to fish requires an investment in the transference of learning, understanding and power that results in the transformation of the man and his children (Low, 2010).

### ***Deconstruction***

Ideas, aspirations or perceived problems are hardly ever the result of one single factor. Indeed, a problem may be the result of seemingly unrelated issues as shown by the “butterfly effect” in economics. An idea on the other hand may not be due to a single thought, but a confluence of thoughts and ideas or the convergence of dreams, talent and teamwork during a brainstorming session (Keeney, 2010). For example, the idea of building a house is made up of many subcomponents and is also expressed in how many ways those components can be assembled. We may also go as far as considering how those sub components can be produced and transported to the construction site. It is in this open deconstruction “space” that the transformative thinker begins to explore and mine new ideas from among metaphysical materials further afield. The transformative thinker examines ideas, not necessarily for their goodness or badness or usefulness,

but more for where and how they may fit into a new picture. It is like the progressive creative process that fabricators use to turn scrap metal into works of art. Transformative thinkers are careful not to dismiss a “poor” or “bad idea”, simply because it is perceived to be so by experts. They are willing to spend some time deconstructing it and examining its various components to understand how the idea could work (Montuori A. , *Transformative Leadership for the 21st Century: Reflections on the Design of a Graduate Leadership Curriculum*, 2010). They find ways to make components work together in different and new ways to formulate another idea based on the “bad” idea that may turn out to be a “good” idea.

### ***Change perspective***

Once a satisfactory “solution” has been found people often lose the energy to continue thinking and are ready to rush off and implement it. While not every situation may require continued creativity, a change of perspective engages a paradigm shift that results in a quantum leap in ideation. The transformative thinker exercises a measure of flexibility to adopt a new or different perspective on matters under consideration. It is hardly ever possible that one can come up with an idea that cannot be improved (Imai, 2012). Nonetheless, before the idea or solution is put into action, the transformative thinker is open to critique and other perspectives (usually not expert) of the concept. The anecdotal story is told of a cleaner tidying up the office of an engineer working on drawings to find a way to fit a lift into a four-story building. The engineer, frustrated by the complexity and cost of the work that needed to be done, shouted in exasperation, “How on earth are we going to fit a lift in this building!” The cleaner thought for a moment and said “Well I am no engineer, but it would be just fine to me if you put it outside”. People normally operate inside their own blinkered paradigm of perfection until they are exposed to another perspective. Transformative thinkers appreciate that there are multiple perspectives in which an issue can be framed and therefore resolved (Keeney, 2010). If you frame an issue as technical, a technical solution makes sense. If you view it as a historic issue then history will present a credible solution. The transformative thinker must rise out of his or her speciality lens, view the aspirations from several different perspectives and create a solution that incorporates sustainable superordinate outcomes. When the mobile phone took over from the fixed line kind, nobody thought of a phone as a billboard, bank, alarm clock and ordering service. However, by looking at that hand held device in different perspectives, it has become all these and more. Change the frame, change the game. For the mathematically inclined the following simple transformative equation describes how,

“Yt” (the transformed Y) is accomplished through a quantum change in perspective, “Qp” plus any changes (or improvement) made to, “Y”.

$$Y_t = Q_p + (Y \times \text{Change}).$$

### **Synthesize solutions**

It is easier for a business to opt for a choice from a set of options rather than create anything original. The tender process institutions use to pay for desired change has allowed top bidders to do the same job for all competitors in an industry. Everyone begins to look the same. Nonetheless, “best practices” place limits on the creativity of engineers who depend on software programs to create vehicles. Every car looks the same as the next one. However, synthesizing a solution is hard work! Synthesizing authentic ethical options is even harder work! It requires transformative agents with a heart for change. It is easier to select the most suitable from available generic options and eliminate them based on price, cost or technical competence. This usually limits the outcomes to existing solutions without creating anything new, superordinate or sublime that is not in the market. The story is told of a transformative leader who, when faced with a problem of how to supply his company with its core components, appointed two in-house teams. The first was to work on a plan to, “hire a company to supply the components”. The second, worked on a plan to “build our own factory to create the needed components”.

The teams worked separately and were given all the resources they needed to come up with synthesized proposals, complete with project details and timelines. After three months, the two groups reported back to the CEO. There was minimal difference in terms of cost. If they bought a company, it would take them five years to recover the costs before turning a profit. However, it would also take five years to build the factory and own all the copyrights (Deutsch et al., 2006). The issue here is not so much that they made a good choice, rather it is the fact that the transformative leader chose to synthesize a solution that would work for the business rather than pick a product off the market shelf. These are two entirely different approaches. In the process, the company had developed a fully competent internal project implementation team. By synthesizing a solution, transformative leaders build in conditions that satisfy all the various stakeholders concerns while ensuring they are suitable, sustainable and enduring. The Pyramids of Ancient Egypt, the Castles and Cathedrals of Europe and the Great Wall of China are enduring examples of synthesized creations that remain in a regal state after hundreds of years in changing environments. Transformative thinkers are willing to synthesize solutions

that transcend the current situation and create enduring value far beyond the convenience of the moment.

### **Integrate new ideas**

To create, introduce and integrate new value into resolving problems at hand can be a herculean task. This is possibly the reason why most leaders will stop at the analysis phase of the thinking process and opt for short term, low hanging solutions to resolve organization issues. It takes effort to diffuse and integrate transformative ideas for public consumption. Transformative ideas are not always easily understood. The stories of Colonel Sanders the founder of Kentucky fried chicken, Patrick Awuah founder of Ashesi University, Wangari Maathai founder of the Greenbelt Movement and the political transformative genius of Nelson Mandela have several things in common; Courage, heart, persistence and patience (Kouzes and Posner, 2012). Transformative thinkers create paradigm shifting value and have the courage to work for their realization.

### **Application**

Transformative thinking is not necessarily a linear or stepwise process, rather it is making sure all the key elements are covered. If you asked a painter, “what are you painting?”, he might say, “I am painting a tree”. If you asked him, “how are you going to paint it?”, he may tell you it is a mash up of ideas, colors and a paint board. In other words, it is neither a precision nor a scientific process, but it is a blended creative process all the same (Sloane, 2007).

While the dominant themes of the 21st century business environment appear to be instability, disruption and dynamic change, transformative thinking empowers business leaders to embrace chaos and challenge not as a threat, but an opportunity to do things differently, explore new options and take advantage of transformative moments to establish ethical and sustainable, strategic growth and development strategy.

The dynamic (transformative) nature of the 21st century environment demands that organizations transform themselves to sustain their operations in the changing environment. Business leaders therefore need to facilitate transformation and birth new solutions to unprecedented challenges. Transformative thinking allows business leaders to use new tools to process new ideas rather than rely on conventional methods to address unconventional challenge.

In reality, business leaders face the challenge of aligning three continuously changing scenarios, a) Environmental change, b) organization development and

c) the evolution of the customer. Transformative thinking enables business leaders to facilitate organization change to align with environmental change, but also guide the business to focus on serving the needs of the evolving customer. This challenge is akin to synchronizing the hour (environment), minute (organization) and second (customer) hands of an analog twelve-hour clock. While the alignment of all three arms occurs but once every 12 h, the arms must remain in perfect synchrony in order for the clock to function perfectly.

The transformative equation,  $Y_t = Q_p + (Y \times \text{Change})$  enables leaders and managers to make a clear distinction between transformation and incremental change. It empowers leaders to ask relevant questions to inspire transformative thinking within their teams and advance basic change ideas into transformation and organization renewal. Making improvements (change) increases the efficiency and effectiveness of current operations. However, transformation, inspired by a change of perspective, opens up new opportunities and markets for business growth (Kim and Moubourgne, 2004).

The catalytic nature of transformative thinking means that it is far beyond the capacity of any single leader to successfully implement on their own. Nevertheless as James Allen emphasizes, it also requires a heart to follow through with action to realize the desired transformation. To successfully navigate dynamic and disruptive environments organizations require transformative thinking, transformative agents and the inclusive empowered participation of everyone with a heart to see the business succeed.

## Conclusion

Business leaders in the 21st Century face the challenge of navigating long-term vision, while steering daily operations in dynamic and disruptive environments. Transformative thinking equips leaders to explore emergent opportunity to ensure a business remains sustainable and profitable, attuned to dynamic market shifts in its environment and strategically structured to meet the needs of an evolving customer base.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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