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# **IMO and internal branding outcomes: an employee perspective in UK HE**

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# **IMO and internal branding outcomes: an employee perspective in UK HE**

This study extends our knowledge of internal branding in the context of employees in the higher education sector. Employing a quantitative methodology in UK universities, a conceptual model is presented and tested on 235 employees. Internal market orientation (IMO) is examined as a management tool to drive employees' university brand commitment *en route* to brand supportive behavior. The results show that the effect of IMO on employees' university brand commitment varies among employees of different demographic groups. A two-step cluster analysis is carried out to highlight the impact of demographic heterogeneity. The results show that universities with higher level of IMO perform better relating to their internal branding outcomes in terms of employee university brand commitment as well as brand supportive behavior. However significant differences are found for the effect of IMO on employees' university brand commitment especially in the cluster of the 'Mature Male Academics', suggesting specific managerial attention.

Keywords: Internal branding; IMO; brand commitment; brand supportive behavior; PLS

## **Introduction**

Nowadays higher education (HE) institutions are undoubtedly operating in an environment characterized by increasing competition, scarcer funds and more demanding students (Gibbs, 2001; Asaad et al., 2013). Hence, many HE institutions in the United States, Australia, New Zealand and the United Kingdom tend to take on academic capitalism (Slaughter and Leslie, 1997), treating HE as service and adopting the market orientation strategy to differentiate their HE offerings from competing universities (Deshields Jr., Kara & Kaynak, 2005). This change has led to a growing trend in the HE management literature that advocates the idea of marketization of HE. This idea views students as customers and calls for the need to manage HE institutions

as distinctive corporate brands to gain a competitive edge (Hemsley-Brown & Lowrie, 2010; Asaad et al., 2013). Nevertheless, despite the importance of branding HE services (Lowrie, 2007), there has been a lack of research attention on branding in the HE sector (Watkins & Gonzenbach, 2013).

To date, the literature into branding academia focuses on external aspects of branding, largely the communication of university brands to the external market (Chapleo, 2005). Such branding effort has frequently been conceptualized from the students' perspective in terms of alumni/students' supportive behaviors to the university (Stephenson & Yerger, 2014), ignoring the key issues that a consistent corporate brand message is unlikely to be effectively communicated to the external market unless brand strategies are supported internally (Wishman, 2009).

Internal branding is of particular importance within the HE sector. HE employees are valuable source for building and differentiating the university brands because they represent HE institutions to the external world via top quality teaching, research output and staff reputation (Naude & Ivy, 1999; Ivy, 2001). Due to the highly personal contact and typically lengthy educational experience (Woodall, Hiller & Resnick, 2014), HE employees can heavily influence students' experience of the university brands first-hand. Being highly qualified with specialized skills and competencies, academic staff is considered very credible to deliver the brand promise, as they convey the core values of universities (teaching and research) to students. Whilst employees are pivotal in delivering the HE services and consistent brand promise to the external environment, the importance for HE institutes to engage their employees in the brand building process is acknowledged (Judson et al., 2009).

However, despite the importance of internal branding to universities, there is a surprisingly striking paucity of research in the HE context. The divide between

administration and the academic units, and the lack of communication amongst different academic units often stops many universities from having effective dialogues about the branding of the institutions internally (Whisman, 2009). The only exception is Judson et al. (2009) who examine brand perceptions of university employees, but they fail to discuss the mechanism that universities could apply to further develop and manage their corporate brands internally. In fact, internal branding literature rarely discusses organizational antecedents that can enhance employees' alignment with the organization's brand values (Mahnert & Torres, 2007). We argue that employees' branding attitudes and behaviors should be examined in a wider organizational context given that employees may derive their brand attitudes from the working environment and the general organizational practices in place. In line with our argument, some authors maintain that the creation of internal branding awareness is a premise of internal marketing programs (Drake, Gulman & Roberts, 2005). In particular, internal market orientation (IMO) is a specific managerial behavior of internal marketing (Gounaris, 2006; Lings, 2004; Lings & Greenley, 2005) which is worth investigating in relation to internal branding. The empirical evidence indicating how IMO can shape employees brand behaviors is nonetheless scarce (King & Grace, 2008; Boukis, Kostopoulos & Katsaridou, 2014). To address this research gap, this study proposes IMO as an internal branding management tool (King & Grace, 2012) to enhance internal corporate branding outcomes, namely employees' brand commitment and brand support behaviors. Furthermore, by investigating whether IMO's influence on internal branding outcomes would differ amongst employees in terms of age, gender, tenure and function, this paper provides specific managerial implications for better managing universities as corporate brands from within.

### **IMO and Internal Branding**

In emphasizing the importance of internal branding, Harris and de Chernatony (2001) recommend managers to align employees' values and behaviors with their desired brand values in order to improve their corporate brand performance. This argument highlights that only when employees understand and believe in their corporate brand values that they can perform consistent brand supportive behavior (Vallaster & de Chernatony, 2006). Internal branding has been considered as a mechanism for enhancing employees' identification with organizations to accomplish the organization's strategic interest, with an aim of achieving congruency between internal and external brand messages (Foster, Punjaisri & Cheng, 2010). It requires integrating interdepartmental and multi-directional internal communication effort and activities to ensure employees' effective delivery of corporate brand promise (Mahnert & Torres, 2007), through a shared understanding of a brand across an organization.

Successful internal branding through internal communications can lead to the realization of the consistent brand image/values to company's stakeholders both internally and externally by committed employees (Thomson et al., 1999). Since the efficacious delivery of corporate brand promise depends largely on employees, internal branding is about achieving the brand consistency and the brand's long-term success through encouraging brand commitment among inspired employees (Foster, Punjaisri & Cheng, 2010). Existing research reveals that internal branding could engender positive outcomes such as employees' brand identification brand commitment (Burmah & Zeplin, 2005), brand loyalty (Papsolomou & Vrontis, 2006), and brand supportive behavior (King & Grace, 2012). Nevertheless, despite the importance of internal branding, extant literature has failed to propose a management tool that can be effectively employed to achieve successful internal branding outcomes (Mahnert & Torres, 2007).

Whilst IMO focuses on motivating employees through multi-dimensional communications and the exchange of information and feedback amongst employees and between employees and management, such effective IMO activities can not only increase employees' satisfaction and motivation (Gounaris, 2006), but also facilitate corporate brands better shaping employees' attitude and behavior to be consistent with external stakeholders' expectations (Thomson et al., 1999). IMO is identified as an effective internal branding tool that could be employed to affect employees' relationships with the brand. This is supported by King and Grace (2008) during their interviews with employees.

Past studies thus consider IMO as an effective management means of achieving employee satisfaction (Gounaris, 2008; Lings & Greenley, 2005), promoting customer orientation in employees (Conduit & Movando, 2001) and facilitating change management and implementation (Joshi, 2007). Hence organizations practicing IMO to attract and retain their most qualified and committed employees are more likely to have a team of brand committed and active employees, with a high level of psychological attachment to the brand (Burmam & Zeplin, 2005).

### **Dimensions of IMO**

Derived from the notion of market orientation, Lings (2004: 291) defines IMO as "the generation and dissemination of information pertaining to the wants and needs of employees, and the design and implementation of appropriate responses to meet these wants and needs". Although the dimensions composing IMO vary among different scholars, most existing literature suggests that IMO's success could be captured by three key attributes, which are (1) internal information collection, (2) internal information communication, and (3) responsiveness to internal market situations (e.g., Gounaris, 2006; Lings & Greenley, 2005; Mitchell, 2002).

### ***Internal Information Collection***

Collecting information about internal customers' current and future needs can help create an emotional connection between employees and the corporate brand (Lings & Greenley, 2005). Employees' perceptions about how much effort their organization makes in order to understand them can strengthen their self-confidence and pride towards the organization. This pride subsequently influences employees' levels of brand commitment to the organization (Punjaisri, Evanschitzky & Wilson, 2009; Lings & Greenley, 2005). A variety of formal and informal means, via in-depth interviews, focus groups, meetings with employees and database analysis, can help management collect such information (Mitchell, 2002).

### ***Internal Communication***

From the internal branding perspective, internal communications include informing employees about the ways they approach their jobs, interacting with customers, explaining brand messages, instilling the brand vision in employees' minds and supporting the brand in every decision they make (Mitchell, 2002). Ferdous (2008) demonstrates how integrated marketing communications could help an organization's internal branding through employee buy-in, commitment and trust. A successful internal communication strategy requires information to flow laterally within and across departments as well as among individuals interacting/non-interacting with customers for the attainment of overall corporate brand image (Papasolomou & Vrontis, 2006).

### ***Responsiveness***

The final stage of IMO includes feedback to and participation from the target audience. Such responsiveness includes the re-design of jobs, measurement and reward systems, enhancing interactions with employees and providing feedback (Mitchell, 2002). Responses from the organization to information that has been collected and



communicated can better address employees' financial and social needs, improve internal service quality and create an overall pleasant working environment (Rucci, Kirm & Quinn, 1998). Therefore the level of an organization's responsiveness is believed to have a positive influence on employees' attitude towards the corporate brand, their brand commitment and positive behavior (Punjaisri, Evanschitzky & Wilson, 2009), all of which support the delivery of the corporate brand promise.

### **Hypothesis Development**

Whilst Baker and Balmer (1997, p.367) state that "individual members of a university are, by definition, experts in their own right", IMO takes the approach of giving importance to employees and perceiving employees as their internal customers. Hence, IMO initiatives such as communicating to employees their value and contribution to the university, as well as responding to their needs, and showing recognition for their achievement are likely to make HE employees feel valued and appreciated (Johnston et al., 1990). A key objective of IMO is to align employees' attitudes and behavior with organizational goals and instilling brand values across the organization (Wieseke et al., 2009). Whilst HE employees are often leaders of opinions, the employment of IMO as the internal branding management tool is likely to have a much higher impact on promoting employees' brand commitment and their brand supportive behavior.

Figure 1 presents a conceptual framework based on the discussion above. This framework advocates a positive influence between IMO and employees' attitudes towards their corporate brand (Gounaris, 2006; Lings & Greenley, 2005; Vallaster & de Chernatony, 2006). The framework specifically suggests that the employment of IMO as internal branding management tool leads to employee brand commitment and brand supportive behavior.

Figure 1 here.

In the HE sector, where brands particularly denote quality, abstract service benefits and prestige, the employment of internal branding is especially crucial as the delivering of HE brand promise involves a huge amount of personal interactions between staff and students (Punjaisri, Evanschitzky & Wilson, 2009). Highly people-based interactions make internal branding more unpredictable, hence highlighting the need of having IMO as a tool to establish and maintain better brand relationships with employees. Fuller et al. (2006) find that in the university context, perceived organizational support and responsiveness are positively related to corporate brand commitment. Therefore, it is argued that:

*H1: A higher level of IMO positively influences employees' commitment towards the university brand.*

Existing evidence suggests that brand commitment leads to brand supportive behavior and loyalty (Knox & Walker, 2003). For example, Rojas-Mendez et al. (2009) find that students' university brand commitment is a key predictor of students' brand support and loyalty. Other studies also confirm the link between employee brand commitment and brand supportive behavior (e.g., Burmann & Zeplin, 2005; Punjaisri, Evanschitzky & Wilson, 2009). Hence, hypothesis 2 is proposed:

*H2: A higher level of employees' commitment toward the university brand positively influences their brand supportive behavior.*

Although employees' corporate brand commitment is proposed to have a positive impact on employee brand supportive behavior, organizations should pay attention to differences among different employee demographic and psychographic groups (Allen & Meyer, 1990). For example, there are employees who are likely to commit and to contribute positively whilst others are likely to commit but contribute less in behavioral terms. Tsui, Egan and O'Reilly (1992) reveal that employees' psychological

commitment and behaviors may vary as a result of demographic heterogeneity. They find younger, less tenured, female, married, and less educated employees tend to have lower commitment and less supportive behavior, e.g. absenteeism (Tsui, Egan & O'Reilly 1992). Therefore, this study proposes that employee personal variables (e.g. age and gender) and situational variables (e.g. tenure and function) have moderating effects on the relationships among IMO, employees' corporate brand commitment and employee brand supportive behavior.

*Age:* Naudé, Desai and Murphy (2002) suggest that there is a significant difference among age groups in terms of how they perceive the organization. For example, younger generations are more critical about their organization because they still have stronger ideals and expectations about how organizations should operate. Tsui Egan and O'Reilly's (1992) study finds that older employees tend to show higher levels of commitment to the organization compared to their younger colleagues. This suggests that higher levels of IMO efforts are needed from the organization to boost brand commitment specifically with younger employees. Similarly, it is assumed that for younger employees (in particular) to exhibit higher levels of brand supportive behavior, they need higher levels of brand commitment. Therefore, the following hypotheses are postulated:

*H3a: Age moderates the impact of IMO on employees' university brand commitment.*

*H3b: Age moderates the impact of employees' university brand commitment on their brand supportive behavior.*

*Gender:* Jenson, White and Singh (1990) confirm gender differences as regards employees' perceptions of an organization. However, the relationship between gender and commitment shows mixed results. For example, Mathieu (1991) finds that women tend to have higher levels of organizational commitment than men whilst Aranya,

Kushnir and Valency (1986) suggest the opposite. Acknowledging the potential gender difference in commitment levels, gender is proposed to have a moderating effect on the strength of the relationships between IMO, employees' university brand commitment and brand supportive behavior. Hence, the proposed hypotheses are:

*H4a: Gender moderates the impact of IMO on employees' university brand commitment.*

*H4b: Gender moderates the impact of employees' university brand commitment on their brand supportive behavior.*

*Tenure:* Existing studies establish a positive correlation between the length of an employee's job tenure and their attitudes towards that organization (e.g. Schlesinger & Zornitsky, 1991). Employees with longer job tenure tend to have higher levels of commitment to the organization compared to employees with shorter job tenure who may need to figure out whether this organization is just a 'springboard' for them (Tsui, Egan & O'Reilly, 1992). Specifically in the case of employees with shorter job tenure, the organization is expected to provide higher levels of management support in order to build their brand commitment. In contrast, Rousseau (1990) suggests employees with longer tenure are more likely to perceive themselves as obligated to establish a more loyal and long-term relationship with their employers with a relatively lesser effect of IMO on their corporate brand commitment. Employees with longer tenure are more likely to *go all the way* and demonstrate tangible loyalty behaviors through turning their attitudes into actions. Hence:

*H5a: Tenure moderates the impact of IMO on employees' university brand commitment.*

*H5b: Tenure moderates the impact of employees' university brand commitment on their brand supportive behavior.*

*Function:* The nature of the work may also influence employees' perceptions towards the corporate brand (Harris & de Chernatony, 2001). Research shows a link between employees' roles and their commitment to the organization (Morrison, 1994). Tsui, Egan and O'Reilly (1992) suggest that employees with a high level of education tend to be less psychologically committed to the organization and have less intention to stay with the organization. In this paper, function is referred to as the role of an employee in an HE institution (academic versus administrator). As the average educational level of academic staff is higher than administrative staff, academic staff is less likely to exhibit commitment or support to the institution relative to administrators. In addition, academic staff generally tends to have a much broader and fluid definition of their job responsibilities compared to administrative staff. Such job breadth has a negative impact on employees' commitment and loyalty (Morrison, 1994). Given that academics are more likely to demonstrate lower levels of brand commitment and support, higher levels of IMO are needed to boost their brand commitment and subsequent brand supportive behaviors. Therefore, it is proposed that:

*H6a: Function moderates the impact of IMO on employees' university brand commitment.*

*H6b: Function moderates the impact of employees' university brand commitment on their brand supportive behavior.*

## **Research Methods**

### ***Samples and Procedure***

To examine the stated hypotheses, a survey was conducted in summer 2014, with the view of collecting data from UK HE employees, which includes both academic and administrative members of staff working at different UK universities. A convenience sampling method was employed. Various colleagues were approached through emails

and phone calls over time. Those who agreed to participate in this survey were then sent an html link to the online questionnaire. In total, 244 responses were gathered, of which 11 were incomplete thus discarded, leaving the final sample of 235 from 31 different UK universities. Table 1 reveals the sample profile. The research instruments were developed with a view to measure the construct of IMO, employee brand commitment and brand supportive behavior. Seven-point Likert scales anchored from 1 = strongly disagree to 7 = strongly agree were used. A pilot test of the questionnaire was carried out by testing the questionnaires with 10 colleagues. Following the feedback from the pilot study, some of the wording was revised for better understanding and clarity.

Table 1 here.

### ***Scales and Measures***

IMO is conceptualized as a second-order reflective construct, measured through internal information collection, internal communication and responsiveness. These three constructs are closely associated with each other and together reflect the quality of IMO (Gounaris, 2006; Lings & Greenley, 2005), with the actual scales adapted from Yu (2013) to better fit in with the HE sector. The correlations of the three constructs can be jointly explained by the overall construct of IMO. The key advantage of applying this second-order IMO model is that it presents IMO's multidimensionality, as reflected on these three underlying constructs (Javis, Mackenzie & Podsakoff, 2003).

*Internal information collection* refers to the generation and assessment of the employees' needs/preferences and the forces that influence the development and refinement of the needs (Kohli, Jaworski & Kumar, 1993). Operationalization measures the overall effort that the management team makes to understand staff's feelings and expectations and to improve their satisfaction (Yu, 2013).

*Internal information communication* refers to the process and extent of internal market information exchange within a given organization in order to facilitate internal brand campaigns successfully (Mitchell, 2002). Together the three items measure whether employees are aware of forthcoming policy changes, whether the university listens to staff's problems and the management team's willingness to talk to staff (Yu, 2013).

*Responsiveness* refers to the actions taken in response to information that is generated and disseminated (Mitchell, 2002). The operationalization of responsiveness consisting of six items measures the extent of prompt feedback given, actions taken to respond to employees' needs and complaints, staff development efforts and policies (Yu, 2013).

To measure employees' brand commitment, the authors adapt King's (2010) scale to measure *university brand commitment*. The scale measures whether employees are proud of and care about the university brand, whether employees share similar values, brand identity and brand loyalty, and whether they make extra effort and feel they fit into the university brand. Finally the measurement of *brand supportive behavior* adapted from King's research (2010) examines the actual behavior that extend beyond formal role requirements in support of the university brand. Together five items measure the employee's willingness to take on extra responsibilities, to recommend the brand to others, and to pass on brand knowledge. Table 2 presents the scale items together with factor loadings for all constructs.

Table 2 here.

### **Statistical Analysis and Hypotheses Testing**

The study employs partial least squares (PLS) to analyze the research model using SmartPLS 2.0 (Ringle, Sarstedt & Straub, 2012). PLS avoids many of the restrictive

assumptions imposed by other causal models that involve latent variables such as LISREL (Chin, Marcolin & Newsted, 2003). More specifically, PLS can accommodate small sample sizes (Wold 1982), essential for this study's model testing.

### ***Measurement Model***

IMO has been operationalized as a second-order measure which is composed of three first-order latent variables (IIC, IC and RI). In assessing the measurement model, the repeated indicators approach is followed (Wold, 1982), which is the most popular when estimating higher order constructs with PLS (Ringle, Sarstedt & Straub, 2012). To assess the psychometric properties of the measures, a null model was initially specified for the first-order latent variables, in which no structural relationships were included. As shown in Table 2, the results show good reliability of all measures. Table 3 shows that the square root of the AVE exceeds the intercorrelations of the construct with the other constructs in the model, in support of discriminant validity (Chin, 1998). Also, the loading of each indicator was found to be greater than all of its cross-loadings suggesting discriminant validity among the constructs (Götz, Liehr-Gobbers & Krafft, 2010; Chin, 1998). The second-order measure also presents a CR greater than 0.80 and AVE greater than 0.50, providing evidence of reliable measures (see Table 4). As Table 4 demonstrates, the loadings of the first order latent variables on the second-order factor exceed 0.70, indicating that all loadings are significant at  $\alpha=0.01$ .

Table 3 and Table 4 here.

### ***Structural Model***

The structural model (Figure 2) was evaluated by the  $R^2$  of the dependent constructs (Chin, 1998). The model explains over 46% of the variance of brand support behavior. Consistent with Chin's (1998) recommendation, bootstrapping using 300 resamples (with 200 cases per sample) was applied to produce t-statistics. The path coefficient



analysis clearly shows the structure of relationships hypothesized in this study (see Table 5). In support of H1, the results show that IMO has a significant and direct positive effect on employees' corporate brand commitment ( $\beta=0.54$ ,  $p<0.001$ ). Also results show that there is a significant and direct positive effect of employees' university brand commitment on employee university brand supportive behavior ( $\beta=0.67$ ,  $p<0.001$ ). Therefore H2 is supported.

Figure 2 here.

Table 5 here.

The study tested the predictive relevance of the structural model following the Stone-Geisser  $Q^2$ . According to Götz et al. (2010), in order to examine the predictive relevance of the research model, the cross-validated construct redundancy  $Q^2$  is necessary. A  $Q^2$  greater than 0 implies that the model has predictive relevance. The structural model proposed has two endogenous variables, with a  $Q^2=0.18$  for university brand commitment and  $Q^2=0.25$  for university brand supportive behaviors. These values are positive and thus provide support for the model's predictive relevance.

### ***Moderation Tests***

This study applied a multi-group analysis to test for moderation effects of age, gender, tenure and function (Chin, 2004) and to determine whether differences amongst the different groups are significant. Tables 6 and 7 provide the results of multi-group comparisons based on  $t$  tests (Chin, 2004).

Table 6 and 7 here.

*Age*: No significant differences are found amongst age groups with regards to the effect of IMO on university brand commitment (UBC), hence rejecting H3a. Significant differences are found for the effect from UBC to brand supportive behavior (BSB), thus supporting H3b. The effect from UBC to BSB is significantly higher for more mature

employees (over 56) than for all the other age groups. The findings thus suggest that mature employees are more likely to carry through their commitment to the university brand in terms of behavior such as recommending the university brand to others, passing on knowledge to new employees etc.

*Gender:* The results show that significant gender differences exist with regards to the effect of IMO on UBC, hence supporting H4a. This effect from IMO to UBC is significantly higher for males than females, suggesting that male employees' university brand commitment is more responsive to effective and interactive communication (see Table 7). However, no significant differences between males and females were found as regards the effect of UBC on BSB. Thus, H4b is not supported.

*Tenure:* The results in Table 6 show that significant differences exist among tenure groups with regards to the effect of IMO on UBC, hence supporting H5a. This effect is significantly lower for employees with tenure of 6-10 years compared to the group of employees with tenure of less than 3 years. Interestingly, for the group of employees with tenure of over 10 years, the effect of IMO on UBC is significantly stronger than the group of employees with 6-10 years employment. Looking at tenure from a timeline perspective, the effect of IMO on employees' UBC is strong in the first 3 years of employment; however this effect then decreases between 3 to 5 years and continues reducing after 5 years of employment. Nevertheless, after 10 years of employment, the effect of IMO on employees' UBC is significantly higher than all the other tenure groups. However, no significant differences among tenure groups are found as regards the effect of UBC on BSB. Thus, H5b is rejected.

*Function:* No significant differences between academics and administrators are found as regards the effect of IMO on employees' UBC or the effect of UBC on BSB (see Table 7). Thus, both H6a and H6b are rejected.

When carrying out moderation analyses, only age, gender and tenure are found to have some moderating effect. Whilst estimating these relationships based on each demographic variable alone may lead to an incomplete understanding of the full impact of demography, a mix of demographic attributes offer a better assessment of how these variables impact on the proposed model (Tsui, Egan & O'Reilly, 1992). Thus, a cluster analysis of the demographic profile, factoring in both personal and situational variables (i.e. age, gender, tenure and function) is posited to identify groups of significant difference and to examine if IMO's impact on employees' university brand commitment and brand supportive behavior varies significantly across groups.

### ***Cluster Analysis***

A cluster analysis is employed to identify distinct groups of employees with similar characteristics (Everitt, 1979). As the data comprises categorical variables, a two-step clustering approach is employed (Hair et al., 2010) to identify groups of employees based on demographic variables (gender, age, years employed and function). The analysis provides four-cluster solutions with SPSS showing a good cluster quality (Garson, 2009). As shown in Table 8, the findings suggest four distinct clusters, which are named as "Newbies", "Mid-career Academics", "Administrators" and "Mature Male Academics".

Table 8 here.

The potential moderating effect of the clusters identified previously is tested using a multi-group analysis (Chin, 2004). First, the measurement properties for each cluster are examined for reliability and validity. Reliability, convergent and discriminant validity for the constructs in each cluster are achieved. The path coefficients and *t* values of the hypotheses were calculated to evaluate the significance

of the relationships in each cluster. The results of hypothesis testing are summarized in Table 8, showing that both H1 and H2 were proven significant in the four clusters.

Further statistical analysis is employed to determine whether differences between the clusters are significant. Table 9 shows the differences in comparisons' path coefficient estimates between clusters, and provides the results of multi-group comparisons based on *t* tests (Chin, 2004). Whilst no significant differences are found between clusters with regards to H2 (the effect of UBC on BSB), significant differences are found for H1 testing the effect of IMO on UBC especially in the case of the cluster of Mature Male Academics. The effect of IMO on UBC is significantly higher for Mature Male Academics than for all the other groups.

Table 9 here.

## **Discussions and Implications**

Whilst existing corporate branding literature fails to address the significance of managing universities as corporate brands with internal stakeholders (Balmer, Liao & Wang, 2010), this study makes the first attempt to employ IMO as a specific internal branding management tool by investigating its effect on university employees' corporate brand commitment and supportive behavior (King & Grace, 2008). Findings confirm IMO's influence on employees' corporate brand commitment and brand supportive behavior in the UK HE setting.

To the best knowledge of the authors, this study is the first to examine how IMO's impact on employees' university brand commitment and brand supportive behavior may vary as a result of demographic heterogeneity. Results show that IMO's impact on university employees' brand commitment varies by age and that the effect of university employees' brand commitment on brand supportive behaviors differs across gender and tenure. Surprisingly, no significant differences between academics and

administrators are found regarding the effect of IMO on the internal branding outcomes under this study.

To better address the difference amongst employee demographic groups, a two-step cluster is run. The results offer new empirical insights in terms of how HE employees' demographic heterogeneity influences their perceptions of IMO, university brand commitment and brand supportive behavior. Four meaningful clusters (each with similar characteristics) are identified. The results suggest that the effects of IMO on employees' university brand commitment and brand supportive behavior are significantly higher in the case of Mature Male Academics than any other groups. Interestingly, whilst Mature Male Academics demonstrate significantly higher impact from IMO to university brand commitment, such commitment is not always carried through and reflected in their brand supportive behavior. Instead, Mid-career Academics that consist of mostly females reveal a much higher linkage between university brand commitment and brand supportive behavior. Newbies and Administrators score similarly. IMO has a moderate impact on their university brand commitment, which then has a relatively high impact on their brand supportive behavior.

This research presents the following managerial implications for HE sector. IMO should be employed by universities as an internal branding management tool because generating and disseminating information to employees as well as responding to their wants and needs through effective communication are critical for improving employees' understanding of the university's norms and values (King & Grace, 2008), as well as their commitment and supportive behavior to the university brand. To do so, senior management needs to ensure employees' views are valued and they are well-informed about organizational issues, such as goals and objectives, brand strategies, activities and

achievements. Effective communication can distil a sense of belonging to and involvement with the university and help strengthen employee brand identification and commitment (Punjaisri, Evanschitzky & Wilson, 2009). Internal communication should involve openness and encourage consultation and staff participation so that employees feel they have a voice and support. Prompt feedback to staff should be provided at all time to promote openness in the working climate and to motivate further feedback, so that employees feel that they are kept up-to-date with all issues in relation to the corporate brand (Mitchell, 2002).

In addition, whilst IMO has a more significant influence on Mature Male Academics than any other groups, universities' senior management should try to involve this group of employees further in designing and implementing new policy changes. By encouraging Mature Male Academics to give feedback and contribute to the development of new corporate policy, senior management could significantly increase Mature Male Academics' commitment to the university brand. In comparison, Mid-career Academics, Newbies and Administrators display more brand supportive behaviors in actual terms, such as spreading positive word-of-mouth recommendations, and taking on extra responsibilities for the better sake of the university once they are committed to a university brand. Whilst IMO has a moderate influence on their university brand commitment, senior management should further explore other facilitating factors such as employee benefits, research support, flexi-working times, etc. through internal market research so that they can better increase these groups of employees' commitment to the university brand.

## **Conclusions**

This paper adds to the literature supporting the marketization of HE and discusses the importance of internal branding in the HE sector. Findings confirm the use of IMO as

an internal branding management tool to increase university staff brand commitment and brand supportive behavior, contingent upon employees' demographic profiles, specific to the UK HE. Nevertheless, whilst the data was only collected from internal stakeholders, namely university staff through convenience sampling, future studies are encouraged to consider collecting data from larger samples across different nations, using a more structured sampling approach to gauge both internal and external stakeholders' views in order to present a more comprehensive framework of corporate brand management (Harris & de Chernatony, 2001). For instance, incorporating both university staff and students as respondents can help examine whether successful internal branding outcomes such as employee brand commitment and brand supportive behavior lead to better corporate image and reputation externally. Future research is also encouraged to consider other internal branding tools, such as brand communication, impact of university brand image (Judson et al., 2009), employee brand identification (Punjaisri, Evanschitzky & Wilson, 2009), or traditional brand campaigns that could be included to increase brand commitment and supportive behavior from a more comprehensive perspective. Lastly, whilst our study only collected responses from each of the 31 universities, future studies are recommended to carry out a further examination on whether universities scoring higher on IMO perform better in the HE sector, and are perceived as more successful corporate brands by different stakeholders.

## **References**

Allen, N.J. & J.P. Meyer. 1990. The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63: 1-18.

- Aranya, N. T.Kushnir, & A.Valency.1986. Organizational commitment in a male-dominated profession, *Human Relations*, 39: 433-448.
- Asaad, Y., T. C. Melewar, G.Cohen & J. M. T. Balmer. 2013. Universities and export market orientation: an exploratory study of UK post-92 universities. *Marketing Intelligence and Planning*, 31(7): 838 - 856.
- Baker, M.J. & J.M.T. Balmer.1997. Visual identity: trappings or substance? *European Journal of Marketing*, 31 (5/6):366-382.
- Balmer J. M. T., M. Liao & W. Wang.2010. Corporate brand identification and corporate brand management: how top business schools do it. *Journal of General Management*, 35(4): 77-102.
- Boukis, A., G. Kostopoulos & I.Katsaridou.2014. IMO and different fit types as key enablers of employee brand-supporting behaviour. *Journal of Strategic Marketing*, 22(2):117-134.
- Burmann, C. & S. Zeplin.2005. Building brand commitment: A behavioral approach to internal brand management. *Journal of Brand Management*, 12(4): 279-300.
- Chapleo, C. 2005. Do universities have 'successful' brands? *International Journal of Educational Advancement*, 6(1): 54-64.
- Chin, W. 1998. The partial least squares approach to structural equation modelling. In: G. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-358). Mahwah, NJ: Lawrence Erlbaum Associates.
- Chin, W., B.L. Marcolin & P.R. Newsted. 2003. A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and an Electronic-mail Emotion/Adoption Study, *Information Systems Research*, 14(2): 189-217.



Chin, W. W. 2004. Multi-group analysis with PLS. Retrieved 1 December 2014 from <http://discnt.cba.uh.edu/chin-/plsfaq/-multigroup.htm>.

Conduit, J. & F.T. Mavondo. 2001. How critical is internal customer orientation to market orientation? *Journal of Business Research*, 51:11-24.

Drake, S. M., M. J. Gulman & S. M. Roberts. 2005. *Light Their Fire*. Chicago, IL: Dearborn

De Shields Jr., O.W., A. Kara, & E. Kaynak. 2005. Determinants of business student satisfaction and retention in higher education: applying Herzberg's two-factor theory. *International Journal of Educational Management*, 19 (2):128-139.

Everitt, B. S. 1979. Unresolved problems in cluster analysis. *Biometrics*, 35: 169-181.

Ferdous, A.S. 2008. Integrated internal marketing communication. *The Marketing Review*, 8(3): 223-235.

Foster, C., K. Punjaisri & R. Cheng. 2010. Exploring the relationship between corporate, internal and employer branding, *Journal of Produce & Management*, 19(6): 401-409.

Fuller J.B., K. Hester, T. Barnett, L. Frey & C. Relyea. 2006. Perceived organizational support and perceived external prestige: predicting organizational attachment for university faculty, staff and administrators. *The Journal of Social Psychology*, 146(3): 327-347.

Garson, G.D. 2009. Statnotes: Topics in Multivariate Analysis. Available at: <http://www2.chass.ncsu.edu/garson/pa765/statnote.htm> (accessed 20.12.14).

Gibbs P. 2001. Higher education as a market: A problem or solution? *Studies in Higher Education*, 26(1):85-94.

Götz, O., K.Liehr-Gobbers & M. Krafft. 2010). *Evaluation of Structural Equation Models Using the Partial Least Squares (Pls) Approach*, in Handbook of Partial Least

- Squares, V.E. Vinzi, W.W.Chin, J. Henseler and H. Wang (eds.). Berlin Heidelberg: Springer: 691-711.
- Gounaris, S. P. 2006. Internal-market orientation and its measurement. *Journal of Business Research*, 59: 432-448.
- Gounaris, S.P. 2008. The notion of internal market orientation and employee job satisfaction: some preliminary evidence, *Journal of Service Marketing*. 22(1): 68-90.
- Hair, J. R. Anderson, R.Tatham, & W.Black. 2010. *Multivariate data analysis*. 6th ed. Upper Saddle River, NJ: Prentice Hall.
- Harris, F. & L. de Chernatony.2001. Corporate branding and corporate brand performance. *European Journal of Marketing*, 35(3/4): 441-456.
- Hemsley-Brown, J. & A. Lowrie, 2010. Higher education marketing. *International Journal of Public Sector Management*, 23(2): 1-3.
- Ivy, J. 2001. Higher education institution image: a correspondence analysis approach. *The International Journal of Educational Management*, 15(6/7): 276 82.
- Javis, C. B., B. S. Mackenzie, and P. M. Podsakoff. 2003. A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research*, 30: 199-218.
- Jenson, T., D.White & R.Singh. 1990. Impact of gender, hierarchical position, and leadership styles on work-related value. *Journal of Business Research*, 20:145-152.
- Johnston, M. W., A. Parasuraman, C. M. Futrell & W. C. Black.1990. A longitudinal assessment of the impact of selected organizational influences on salespeople's organizational commitment during early employment. *Journal of Marketing Research*, 27, 333– 344.
- Joshi, R. 2007. Internal marketing in service organizations: need for reorientation. *Journal of Services Marketing*. 5(4): 28-26.

- Judson, K. M., T.W. Aurand, L. Gorchels & G. L. Gordon. 2009. Building a university brand from within: University administrators' perspectives of internal branding. *Services Marketing Quarterly*, 30: 54-68.
- King, C. & D. Grace. 2008. Internal branding: exploring the employee's perspective, *Brand Management*, 15(5): 358-372.
- King, C. & D. Grace. 2012. Examining the antecedents of positive employee brand related attitudes and behaviors. *European Journal of Marketing* 46(3), pp. 469-488.
- King, C. 2010. One size doesn't fit all: Tourism and hospitality employees' response to internal brand management. *International Journal of Contemporary Hospitality Management*, 22 (4): 517-534.
- Knox, S. D. & D. Walker. 2003. Empirical developments in the measurement of involvement: Brand loyalty and their relationship in grocery markets. *Journal of Strategic Marketing*, 11(7): 271-186.
- Kohli, A. K., B. J. Jaworski & A. Kumar. 1993. MARKOR: A measure of market orientation. *Journal of Marketing Research*, 30(November): 467-477.
- Lings, I. N. 2004. Internal market orientation: constructs and consequences. *Journal of Business Research*, 57: 405-413.
- Lings, I. N. & G. E. Greenley. 2005. Measuring internal market orientation. *Journal of Service Research*, 7(3): 290-305.
- Lowrie, A. 2007. Branding higher education: equivalence and difference in developing identity. *Journal of Business Research*, 60 (9): 990-999.
- Mahnert, K.F. & A.M. Torres. 2007. The brand inside: the factors of failure and success in internal branding. *Irish Marketing Review*, 19(1and2): 54-62.

- Mathieu, J.E. 1991. A cross-level nonrecursive model of the antecedents of organizational commitment and satisfaction. *Journal of Applied Psychology*, 76: 607-618.
- Mitchell, C. 2002. Selling the brand inside. *Harvard Business Review*, January: 99- 105.
- Morrison, E.W. 1994. Role definitions and organizational citizenship behavior: the importance of the employee's perspective. *Academy of Management Journal*, 37(6): 1543-1567.
- Naudé, P., Desai, J. & J. Murphy.2002. Identifying the determinants of internal marketing orientation. *European Journal of Marketing*, 37(9): 1205-1220.
- Papasolomou, I. & D.Vrontis.2006. Building corporate branding through internal marketing: the case of the UK retail band industry. *Journal of Product and Brand Management*, 15 (1): 37-47.
- Punjaisri, K., H.Evanschitzky & A.Wilson.2009. Internal branding: an enabler of employees' brand-supporting behaviors. *Journal of Service Management*, 20 (2): 209-226.
- Ringle, C.M., M.Sarstedt & D.W. Straub.2012. A critical look at the use of PLS-SEM in MIS Quarterly. *MIS Quarterly*, 36(1), iii-xiv.
- Rojas-Me´ndez, J.I., A.Z. Vasquez-Parraga, A. Kara, and A. Cerda-Urrutia. 2009. Determinants of student loyalty in higher education: a tested relationship approach in Latin America. *Latin American Business Review*, 10: 21-39.
- Rousseau, D.M.1990. New hire perceptions of their own and their employer's obligations: a study of psychological contracts. *Journal of Organizational Behavior*, 11: 389-400.
- Rucci, A., S. P. Kirn, & R. T. Quinn.1998. The employee-customer-profit chain at Sears. *Harvard Business Review*, January-February: 83-97.

Schlesinger, L. & J. Zornitsky.1991. Job satisfaction, service capability, and customer satisfaction: an examination of linkages and management implications. *Human Resource Planning*, 14(2):141-149.

Slaughter, S. & Leslie, L.L. 1997. *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Maryland: Johns Hopkins University Press.

Stephenson, A. L. & D. B. Yerger.2014. Does brand identification transform alumni into university advocates? *International Review on Public and Nonprofit Marketing*, 11(3): 243-262.

Thomson, K., L. de Chernatony, L.Arganbright, & S.Khan. 1999. The buy-in benchmark: how staff understanding and commitment impact brand and business performance. *Journal of Marketing Management*, 15(8): 819-835.

Tsui, A.S., T.D. Egan & C.A. O'Reilly.1992. Being different: relational demography and organizational attachment. *Administrative Science Quarterly*, 37(4): 549-579.

Vallaster, C. & L.de Chernatony.2006. Internal brand building and structuration: the role of leadership. *European Journal of Marketing*, 40 (7/8): 761-784.

Watkins, B. A. & W. J. Gonzenbach.2013. Assessing university brand personality through logos: an analysis of the use of academics and athletics in university branding. *Journal of Marketing for Higher Education*, 23(1): 15-33.

Wieske, J., M.Ahearne, S.K. Lam, and R.Dick. 2009. The role of leaders in internal marketing. *Journal of Marketing*, 73(March): 123-145.

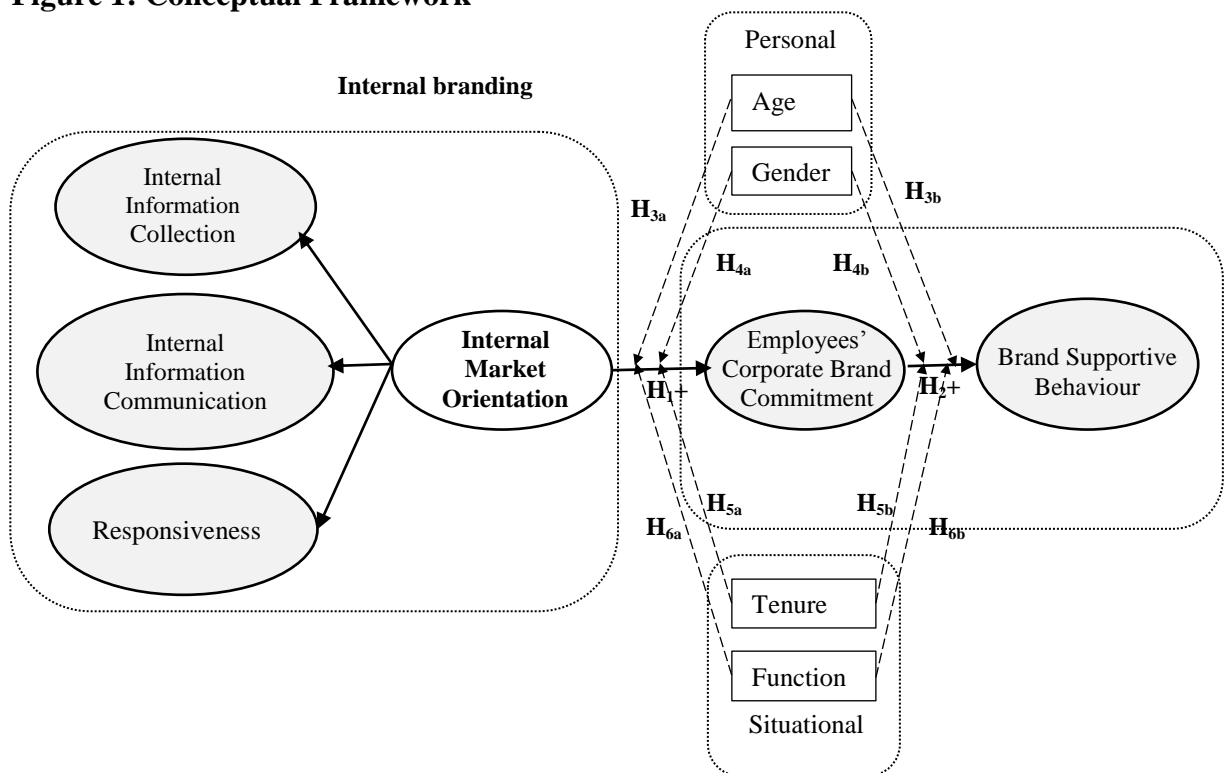
Whisman, R. 2009. Internal branding: a university's most valuable intangible asset, *Journal of Product & Brand Management*, 18 (5):367-370

Wold, H. 1982. Soft Modelling: The Basic Design and Some Extensions. In: K. G. Joreskog and H. Wold (Eds), *Systems Under Indirect Observations*, Part II (pp. 1-54). Amsterdam: North-Holland.

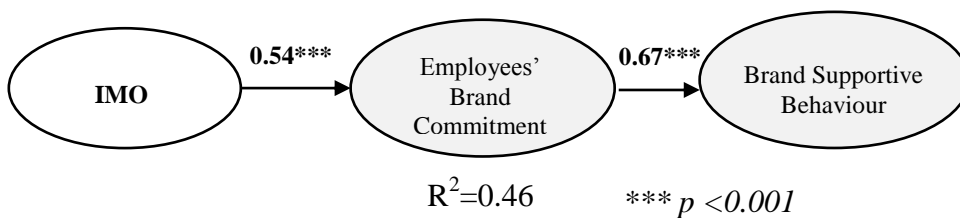
Woodall, T., A.Hiller & S. Resnick.2014. Making sense of higher education: students as consumers and the value of the university experience, *Studies in Higher Education*, 39(1): 48-67.

Yu. Qionglei. 2013. *Investigating Internal Market Orientation and Organizational Performance in China*. Ph.D Thesis. University of Sheffield.

**Figure 1: Conceptual Framework**



**Figure 2: PLS Structural Model**



**Table 1: Sample Description**

University	Percentage	Years of employment	Percentage
Russell group	28.5%	Less than 3 years	31%
Pre-92	28.5%	3-5 years	21%
Post-92	43%	6-10 years	24%
<b>Position</b>		Over 10 years	24%
Academic staff	72%	<b>Age group</b>	

Administrative staff	28%	18-35	24%
<b>Gender</b>		36-45	30%
Male	51%	46-55	32%
Female	49%	56+	14%

**Table 2: Measurement Model Evaluation for First-order Constructs**

Construct item	Loading	$\alpha$	CR	AVE
<i>Internal Information Collection</i>		.71	.83	.62
Our university conducts formal research to find out staff feelings about their jobs and the university.	.75			
In our university, management interacts directly with staff to find out how to improve their satisfaction.	.87			
Our university has regular staff appraisals to discuss the expectations of the employees.	.74			
<i>Internal Information Communication</i>		.80	.88	.71
In our university, staff is made aware of forthcoming policy changes in advance of their implementation.	.77			
Our university usually listens to staff sincerely when they have problems in doing their jobs.	.87			
The management team in our university is always willing to talk to staff when there is a need.	.88			
<i>Responsiveness to Information</i>		.82	.89	.73
In our university, staff needs are often taken into account in planning their employment, e.g. job-design, training program selection, and personal development efforts.	.90			
Our university staff development schemes are in line with the requirements of the staff.	.88			
In our university, staff suggestions/complaints fall on deaf ears.	.78			
<i>University Brand Commitment</i>		.86	.90	.65
I am proud to be part of the university brand I work for.	.88			
I really care about the fate of the university brand I work for.	.73			
My values are similar to those of the university brand I work for.	.85			
I put in extra effort beyond what is expected to make the university brand successful.	.72			
I feel like I fit into the university brand.	.84			
<i>Brand Supportive Behavior</i>		.81	.87	.58
I take responsibility for tasks outside my job role if necessary.	.62			
I consider the impact on the university brand before communicating or taking action.	.77			
I regularly recommend the university brand to family and friends.	.78			
I pass on knowledge of the university brand to new members of staff.	.77			
I am always interested to learn about the university brand and what it means for my role.	.83			

**Table 3: Correlations between Constructs**

	1	2	3	4	5
1. University brand commitment	<b>.81</b>				
2. Brand supportive behavior	.68	<b>.76</b>			
3. Internal information communication	.53	.38	<b>.84</b>		
4. Internal information collection	.43	.33	.55	<b>.79</b>	
5. Responsiveness	.45	.30	.78	.56	<b>.85</b>

Off-diagonal entries are correlations among constructs. On the diagonal are the square root of the AVEs.

**Table 4: Assessing the Hierarchical Model for IMO**

Constructs	Loading	$\alpha$	CR	AVE
<i>Internal Market Orientation</i>		.88	.90	.52
Internal Information Collection	.77			
Internal Information Communication	.91			
Responsiveness to Information	.91			

**Table 5: Path Coefficients**

Paths	H	Expected sign	Path coeff.	Std. error	Absolute t-value
IMO -> UBC	H1	+	0.54***	0.05	10.55
UBC -> BSB	H2	+	0.67***	0.06	10.45

\*\*\*  $p < 0.001$

**Table 6: Age and Tenure Groups Comparison Test Results**

Relationship	Age Groups			Tenure Groups		
	Comparison	diff	t Statistic	Comparison	diff	t Statistic
IMO -> UBC	[18-35] vs.[36-45]	0.08	1.04	[<3] vs.[3-5]	0.09	1.31
	[18-35] vs.[46-55]	0.02	0.34	[<3] vs.[6-10]	0.18	2.38*
	[18-35] vs.[>56]	0.06	0.9	[<3] vs.[>10]	0.01	0.26
	[36-45] vs.[46-55]	0.1	1.45	[3-5] vs.[6-10]	0.09	1.13
	[36-45] vs.[>56]	0.02	0.24	[3-5] vs.[>10]	0.11	1.69
	[46-55] vs.[>56]	0.08	1.18	[6-10] vs.[>10]	0.2	2.63*
UBC -> BSB	[18-35] vs.[36-45]	0.06	0.8	[<3] vs.[3-5]	0.09	0.94
	[18-35] vs.[46-55]	0.05	0.52	[<3] vs.[6-10]	0.03	0.42
	[18-35] vs.[>56]	0.25	3.04**	[<3] vs.[>10]	0.05	0.58
	[36-45] vs.[46-55]	0.01	0.1	[3-5] vs.[6-10]	0.05	0.81
	[36-45] vs.[>56]	0.19	2.5*	[3-5] vs.[>10]	0.03	0.4
	[46-55] vs.[>56]	0.2	2.05*	[6-10] vs.[>10]	0.02	0.26

\* $p < 0.05$ ; \*\* $p < 0.01$



**Table 7: Gender and Function Comparison Test Results**

	Males		Females		<i>t</i> -statistic for difference	Academics		Admin.		<i>t</i> -statistic for difference
	Path coeff.	<i>t</i> value	Path coeff.	<i>t</i> value		Path coeff.	<i>t</i> value	Path coeff.	<i>t</i> value	
IMO -> UBC	0.64** *	15.9	0.40** *	6.32	3.26**	0.56** *	10.38	0.47** *	9.14	1.08
UBC -> BSB	0.57** *	7.4	0.72** *	14.3	1.61	0.66** *	9.32	0.69** *	18.37	0.28

\*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table 8: Cluster Results**

	Cluster 1 'New bs'		Cluster 2 Mid-career academics		Cluster 3 Administrators		Cluster 4 Mature male academics	
No. cases (%)	49 (20%)		70 (30%)		72 (31%)		44 (19%)	
Position	Academics (100%)		Academics (100%)		Admin (100%)		Academics (100%)	
Years employed	Less than 3 years (100%)		3-5 years (55%)		6-10 years (34%)		Over 10 years (50%)	
Gender	Male (51%)		Female (70%)		Female (61%)		Male (100%)	
Age	36-45 (47%)		36-45 (41%)		46-55 (31%)		46-55 (60%)	
Hypothesis testing	Path coeff.	<i>t</i> value	Path coeff.	<i>t</i> value	Path coeff.	<i>t</i> value	Path coeff.	<i>t</i> value
IMO -> UBC	0.52** *	10.51	0.4***	6.16	0.48***	10.17	0.73***	21.41
UBC -> BSB	0.68** *	12.23	0.75***	15.7	0.71***	16.9	0.57***	5.55
R <sup>2</sup>	47%		61%		46%		47%	

\*\*\*  $p < 0.001$

**Table 9: Multi-group Comparison Test Results**

Relationship	Comparison	diff	t Statistic
IMO -> UBC	Cluster 1 vs. 2	0.12	1.3
	Cluster 1 vs. 3	0.04	0.47
	Cluster 1 vs. 4	0.21	3.6**
	Cluster 2 vs. 3	0.08	0.97
	Cluster 2 vs. 4	0.33	3.98***
	Cluster 3 vs. 4	0.25	3.72***
UBC -> BSB	Cluster 1 vs. 2	0.07	0.89
	Cluster 1 vs. 3	0.03	0.31
	Cluster 1 vs. 4	0.11	0.95
	Cluster 2 vs. 3	0.04	0.7
	Cluster 2 vs. 4	0.18	1.7
	Cluster 3 vs. 4	0.14	1.34

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$