

Dispositional Resistance to Change and User Resistance Behaviour to Use Human Resources Information Systems in the Healthcare Sector: The Moderating Role of Conscientiousness

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Abstract: *The aim of this study is to predict the perspective of the end-user's resistance for using HRIS application in the context of public healthcare sector in Saudi Arabia. It attempts to open the black box of dispositional resistance to change (DRTC) by conceptualizing it as a dimension set. Furthermore, this study will incorporate the moderating effect of conscientiousness from big five factors of personality traits. Which will provide a better explanation about the influence of DRTC, and an accurate weight of effects caused by the end-user differences. The results were obtained using the survey method, involving 373 responses. The structural equation modelling (SEM) was used to test the hypotheses. The result showed that routine seeking influenced both perceived ease of use and perceived usefulness, and that both of perceived ease of use and perceived usefulness significantly predicted behavioural intention, also that Conscientiousness moderate the relationship between behavioural intention and user resistance behaviour. Theoretically, the study suggests that end user's resistance could be investigated and understood via various theories in a single model. The findings suggest that managers and system developers need to engage the end-users in developing HRIS in the public healthcare sector.*

Keywords: *Dispositional Resistance to Change - Routine Seeking, Technology Acceptance Model (TAM), Human Resources Information System (HRIS), and User Resistance Behaviour.*

I. INTRODUCTION

Recently, work activities have been greatly influenced by the rapid advances and the widespread application of information technology (IT) at both the personal and organizational level. And the use of the human resource information system (HRIS) application as a tool to perform human resource (HR) tasks is one of the key influential outcomes of information technology (IT) [23] [3]. That collects, delivers, stores, presents, manages and manipulates data related to HR functions [28]. Nowadays, most firms are becoming dependent on HRIS applications [24]. However,

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many concerns often raised about the disparity between the large amount of capital invested in the adoption of a HRIS and the real profit made from these adoptions [13]. As organizations make huge investments in the development of HR systems and adoption, but the acceptance among end-users is still low [5] [50].

End-user resistance and its role in the unsuccessful adoption of new technology has caught the attention of researchers [5]. And considered as the major reason for an IT project failure [10] [15]. As it is fundamental for the system to be accepted by its end-users as the system operate through them. Yet, different end-users may respond differently to change [18]. Thus, it is important to understand the reasons for user's behaviour if they exhibit internal (passive) rejection towards using the system because this will affect the organization's goals in either the short or the long term [10]. There is a lack of comprehensive studies that examine resistance to adopt new technology in literature. And the link between DRTC' dimensions and user resistance behaviour towards using an HRIS remains fragmented and has not been systematically investigated.

Accordingly, this study will fill this gap by conceptualizing DRTC as a dimension set of four variables (short-term focus, routine seeking, emotional reaction, and cognitive rigidity). In order to get an accurate weight of the effects caused by the end-user differences as well as to avoid overweighting characteristics of the situation [11], [46], [36]. examining the effect of each dimension of DRTC then analysing it separately. Which provide a better explanation of the influence of DRTC on the TAM variables. In addition, answering the call of [11] to break down the DRTC dimension into its various components.

Furthermore, there are inconsistent results with respect to the relationship between behavioural intention and user behaviour. Some studies found a significant relationship between them [12], [36] while other found it insignificant [7]. Therefore, the current study will answer the suggestions to incorporate a moderating variable into this relationship [35] [14]. And use conscientiousness from big five factors, which is a good predictor of employee behaviour when their behaviour is not observed [9], [54], as a moderating variable.

In addition, Despite the interest in adopting new technology applications in both developed and developing countries [55], [56], [57], many studies have found that in developing countries there is a large gap between the number

of adoptions and the number of successful implementations of HRISs compared to the ratio in developed countries [6], [19]. And there is still incomplete understanding of the effectiveness of HRIS adoption in developing countries [16]. That are now waking up to the realization that they have to embrace ICT to deal with the problems of access, quality, usage, and costs [17].

The Kingdom of Saudi Arabia (KSA) nowadays in a process to achieve the Saudi Vision 2030. Giving a priority to building great foundations for a good future. Thus, one of its strategic objectives is to enhance government effectiveness. Therefore, it developed the e-Government which focuses on implementing new technology in all public sectors, especially healthcare sector, that has been given top priority and the government is allocating a huge budget for building healthcare infrastructure and modern hospitals [51]. In addition, the use of an HRIS in healthcare sector has been mandatory since the end of 2016 [58].

However, like other developing countries in the region, Saudi Arabia still has a gap between adopting HRIS applications and successfully implementing them, especially in the public healthcare sector [6], [19]. Moreover, most of the previous research in Saudi Arabia have focused on the use of new technology specifically in the private sector [1], [52] [53]. Despite the huge investments in technological facilities and systems, a complete understanding of what factors contribute to unsuccessful HRIS adoption in Saudi Arabia is still unclear. Accordingly, this study will contribute by investigating this issue in the context of public health care sector in Saudi Arabia. Furthermore, to the best of the researcher knowledge no studies have focused on this issue in the Saudi public healthcare sector. Therefore, this study inspects the reasons for the resistance to adopt HRISs in this sector.

1.1 Dispositional Resistance to Change (DRTC), Perceived Usefulness, and Perceived Ease of Use

With respect to the issue of personality, it is widely agreed that DRTC is a determinant of cognitive, affective, and behavioural resistance to change [20], and one of the external variables that can predict perceived ease of use and perceived usefulness [11], [46], [49]. The number of studies that have used DRTC to understand employee resistance to using IS has increased recently [11], [21]. DRTC have multidimensional variables (emotional reaction, routine seeking, short-term focus, and cognitive rigidity) [25].

The TAM has long been used as a platform to explain the processes through which new technologies are adopted [59], [60], [61]. It proposes that people tend to use technology that they believe will take less effort (ease of use) but be of great benefit for their tasks (usefulness). TAM has been used in many studies to predict users' behavioural intention [62] [26] [63]. End-users' perceptions are mainly determined by how they evaluate the adoption of new technologies [11]. This allows the inclusion of variables that are related to both social and human factors, which greatly improves the model's power of prediction. a deeper understanding of the factors contributing to usefulness and ease of use is needed [22].

Therefore, this study hypothesizes that the relationship between each dimension of dispositional resistance to change and perceived ease of use and perceived usefulness is a negative relationship.

First, routine seeking explains the extent to which individuals continue to follow a traditional and exceptionally

unsurprising way of doing things and would rather use a familiar methodology in a familiar situation [25]. In particular, their evaluation is mainly based on what personal and organizational benefits are expected from the introduction of new technologies [11]. People with a high level of routine seeking generally consider changes to be a negative, they do not like to change their life routine, which may reflect negatively on their belief about how easy the new system will be to use and how useful it will be to them [25]. As new technologies might bring about stress, anger, discomfort, and fear of losing control [25], As a result of such negative feelings, employees will perceive that new technology will not add value to either themselves or the organization as a whole. Thus, they might perceive that the HRIS will be difficult to use. Moreover, literatures have indicated this negative relationship [11], [46], [49].

Second, an emotional reaction is centered on the degree to which individuals experience inconvenience, an absence of eagerness, and nervousness when changes are forced upon them [25]. End-users feel stressed when they are faced with changes and there is a higher tendency when they are stressed that they will have negative perceptions of change. Change makes them feel uncomfortable. Thus, users will tend to consider that their emotional reaction is good with old way they used to do their work [27]. Further, using new technology involves uncertainty, which can harm their perceptions regarding new technology. This is more salient for users who have more sensitive to uncertainty. Thus, giving a relatively low evaluation of the usefulness of an HRIS is a way to avoid using it [46]. Their perception about the ease of use of an HRIS is relevant to users' effort to learn and adapt to the new system. When users have a high level of resistance to change, in addition to the effort needed to master the skills required to use a new system [27], they need to spend more effort on overcoming negative emotional reaction responses to change [46]. In this case, the users with a high level of resistance to change tend to overstate the difficulty of learning how to use HRIS and give a relatively low evaluation of its ease of use. These relationships have been tested and proved [11] [46] [49].

Third, short-term focus is based on how much stress people place on overall weaknesses and inconveniences that then alters their perception of the reality of a change, in contrast to concentrating on the potential advantages and benefits that could accumulate to them over the long haul as a result of such a change [25]. People who focus on the long-term advantages of the adoption of an HRIS rather than on the discomforts resulting from its initial implementation are less threatened than those who focus on the short-term discomforts [21]. When a new technology is being introduced, the degree of ease associated with the use of the system plays a critical role in determining adoption. For users with a high level of short-term focus, learning and using a new technology would entail more mental effort because they have to overcome negative cognitive and emotional responses to the changes brought about by the technology. Therefore, users with a higher short-term focus would have a lower perception of both the perceived ease of use and perceived usefulness of a new technology [18]. Some studies support this negative relationship [11], [46], [49].

Fourth, cognitive rigidity represents “a form of stubbornness and an unwillingness to consider alternative ideas and perspectives” [21] p.936). It involves a form of strong personal convictions that are typically associated with a higher level of self-confidence [21]. This type of end-user cannot change their mind easily [25]. The indirect effects suggest that salient inhibitors, such as cognitive rigidity, tend to influence enablers, such as perceived usefulness and perceived ease of use, in a negative manner. According to norm theory suggests that negative perceptions and acts garner more cognitive attention, are remembered better, and instigate greater information processing than positive ones [64]. Also, compared to enablers, resistance tends to garner a wider range of emotional reactions ranging on the part of potential users from overt opposition to covert stalling. Moreover, inhibitors, when present, tend to anchor one’s overall perception towards attitude objects, subsequently biasing all other perceptions, including those of enablers. For instance, a single instance of system failure may lead an end-user to view the target HRIS as being of overall poor quality, despite more frequent instances of adequate system functioning or its multitude of positive features and capabilities. These relationships have been investigated in other works [11], [46], [49]. Therefore, the following two hypotheses are proposed:

Hypothesis 1: The higher the routine seeking, the lower the perception of the a) perceived ease of use of an HRIS; b) perceived usefulness of an HRIS.

Hypothesis 2: The higher the emotional reaction, the lower the perception of the a) perceived ease of use of an HRIS; b) perceived usefulness of an HRIS.

Hypothesis 3: The higher the short-term focus, the lower the perception of the a) perceived ease of use of an HRIS; b) perceived usefulness of an HRIS

Hypothesis 4: The higher the cognitive rigidity, the lower the perception of the a) perceived ease of use of an HRIS; b) perceived usefulness of an HRIS.

1.2 Perceived Ease of Use, Perceived Usefulness, and Behavioural Intention

The TAM argues that perceived ease of use and perceived usefulness, will promote employee acceptance of new technology through influencing their intention to use it. Behavioural intention is the probability that an individual will exhibit acceptance or rejection behaviour [2], especially regarding the use of HRIS. People exhibit behavioural intention to use a particular IS, if they have the expectation that it will enhance their job performance and eventually help them to achieve a variety of job-based rewards such as promotion and/or pay increases [66]. Furthermore, the process by which an employee evaluates whether or not an information system is easy to use will foster a cognitive mechanism with respect to their intention to use the system [29]. The relationship between perceived ease of use, perceived usefulness, and behavioural intention is supported theoretically by the TRA [30] and empirically supported too [26], [49], [65], [67], [68]. Therefore, perceived ease of use

and perceived usefulness are positively related to behavioural intention. Thus, this study offers the following two hypotheses:

Hypothesis 5: Perceived ease of use is positively related to behavioural intention.

Hypothesis 6: Perceived usefulness is positively related to behavioural intention.

1.3 Behavioural Intention and User Resistance Behaviour

Behavioural intention is identified as the factor that represents people’s willingness and effort to perform behaviour, in this case to use technology [2]. The theory of planned behaviour (TPB) [2] has been used extensively in the identification of the determinants of a wide range of behaviours [31], [77].

The relationship between behavioural intention and user resistance behaviour is supported theoretically by the TPB [2]. The TPB postulates that a person’s behavioural belief about the consequences of behaviour and how such consequences are effectively estimated determine the person’s attitude to that behaviour.

In the IS literature, user resistance behaviour is conceptually described as user opposition to change and the implementation of a new system [32]. On the other hand, actual behaviour can be measured immediately if the technology has been used for a longer time [33]. In this study, the user resistance behaviour towards using an HRIS is investigated in the context of the public healthcare sector in KSA, which only recently implemented an HRIS at the end of 2016, and the data was collected at the end of March 2017. Numerous studies have utilized behavioural intention to explain user behaviour towards using technology [65].

However, the relationship between intention behaviour and user resistance behaviour is negative relationship [7]. Thus, this study proposes the following hypothesis:

Hypothesis 7: Behavioural intention is negatively related to user resistance behaviour.

1.4 The Moderating Role of Conscientiousness

In this study, conscientiousness which is a trait of the big five personality, is used as moderating variables on the relationship between behavioural intention and user resistance behaviour. According to personality trait theory, differences in the characteristics among people might influence the relationship between different constructs [34]. Personality has been used to predict the behaviours of individuals in the field of psychology for a long time. And it has been established in various contexts that behaviours are predicted by personality traits [69], [70].

Conscientiousness is related to being reliable, orderly, determined, and punctual. It has been considered as the most consistent personality predictor of job performance in general [8], [35], [71], and a good predictor of behaviour [35], [72]. End-users with high conscientiousness are careful, possess more self-control,

follow procedures to a greater extent, exert more effort, adopt a more logical approach, and make fewer mistakes, thus this trait can affect their behaviour significantly [37], [73].

In this study, it is believed that individuals who have a higher level of conscientiousness have better organizational skills and self-discipline, and are dependable in their behaviour when their intention is low in respect of using new technology, which will weaken their resistance behaviour towards using an HRIS as they will tend to be more achievement-oriented and care about their career prospects [38]. They will not use escape-avoidance techniques [40]. Thus, individuals with a high level of conscientiousness tend to be cautious in their reactions to situations and events [42], [65], [74]. Therefore, this study proposes the following hypothesis:

Hypothesis 8: The higher the level of conscientiousness, the weaker the relationship between behavioural intention and user resistance behaviour towards using an HRIS.

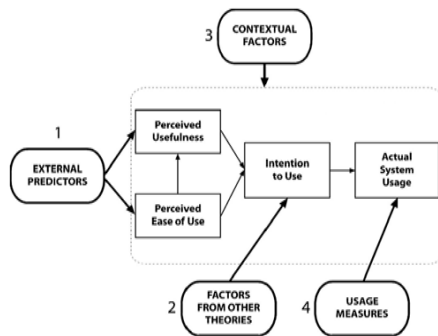


Fig. 1 Four major categories of TAM modification
Source: [45]

II. METHODOLOGY

This study uses a cross-sectional survey to examine the hypotheses presented at the individual level. The population contained of those who use an HRIS in the Saudi public healthcare sector. Purposive sampling technique was used. A G Power test was conducted to identify the appropriate sample size. 373 questionnaires were fully answered. 5-point Likert scale was employed. Each construct was measured by using established scales that have been widely used in previous studies.

The demographic characteristics results showed that 68.1 per cent (254) of the respondents were male, while 31.9 per cent (119) were female. The age group with the most respondents was the 30 to 34 years of age group at 27.1 per cent, most of the respondents held a degree certificate (42.9 per cent), while 32.2 per cent held a diploma. The majority of the respondents worked in the nursing department (74 per cent; 276 respondents). Almost (37.3 per cent; 139) respondents didn't attended HRIS training courses, while 33.8 per cent (126) had attended one to two courses.

Structural equation modelling software Smart PLS 3.0 was employed for the present study. First Convergent validity established through the AVE, composite reliability and Cronbach's alpha of the constructs. Table 1 shows the result

of Convergent validity at the construct level. In internal consistency, the Cronbach's alpha values ranged from 0.706 to 0.936, indicating that there was internal consistency reliability. The results of composite reliability for all the constructs ranged from 0.809 to 0.950. However, for indicator reliability (outer loading), only four items were dropped step by step [39] due to low factor loadings, which represent 8.51% of the 47 study items. After that the internal consistency of all the constructs was within the acceptable range Average variance extracted (AVE) results shows that the AVE of all the latent constructs was higher than the threshold of 0.50. The values ranged between 0.663 and 0.762 except for Routine Seeking, which was 0.467, because the researchers retained item RS4.

Discriminant validity indicates to the distinct between latent construct to other constructs in the study. The method of examination was adopted, and items with an outer loading above 0.70 were retained. The Heterotrait-Monotrait ratio of correlations (HTMT) values near to 1 show a lack of discriminant validity.

The main criteria that were used to evaluate the structural model were lateral collinearity, size and significance of the path coefficients, the coefficient of determination (R^2), the effect sizes of R^2 (f^2), and the predictive relevance (Q^2). The assessment also included hypotheses testing. Bootstrapping procedure was performed for 373 cases with 5000 samples. The first stage of assessing the structural model ascertain the variance inflation factor (VIF) values of the independent variables to determine whether there is lateral collinearity in the model. All the inner VIF values of the independent variables should be less than 5.0 [39]. Alternatively, a more stringent criterion can be used, where the VIF values should be 3.3 or higher [41]. Based on the result, PEOU = 0.679 is the most important predictor, followed by PU = 0.525, followed by BI = 0.245. The results are presented in Figure 2.

Table 1 AVE, Composite Reliability and Cronbach's alpha of the constructs

Constructs	Outer loading	Cronbach's alpha	Composite reliability	AVE
Routine Seeking	0.61-0.80	0.706	0.809	0.47
Short-term Focus	0.82-0.87	0.820	0.892	0.73
Cognitive Rigidity	0.77-0.89	0.796	0.877	0.70
Emotional Reaction	0.84-0.87	0.828	0.893	0.74
Perceived Ease of Use	0.71-0.84	0.898	0.922	0.66
Perceived Usefulness	0.82-0.89	0.936	0.950	0.76
Behavioural Intention	0.86-0.87	0.844	0.906	0.76
Conscientiousness	0.74-0.84	0.917	0.933	0.67
User Resistance Behaviour	0.81-0.91	0.911	0.923	0.75

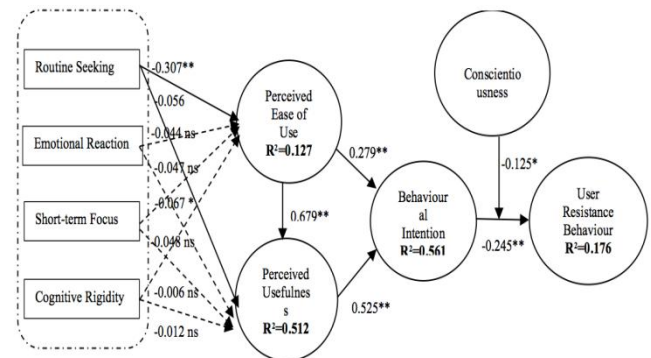


III. RESULTS

The results of testing the hypotheses of DRTC dimensions showed that the only routine seeking was significant which able to explain 51.2 per cent of the R^2 of the PU and 12.7 per cent of the R^2 of PEOU. The effects of mandatory HRIS usage demonstrate that the end-users could have a common tendency to perceive change in a negative rather than positive way. Moreover, the outcomes indicate that workers who seek out and like unchanging stable situations usually show a negative attitude towards PEOU and PU. However, these outcomes indicate that even the most perfect systems may be perceived negatively by end-user, as perceptions determined by the individual end-user's personal predisposition. Therefore, the results of non-significant relationship will look for more researchers to ascertain why the results of H2a, H2b, H3a, H3b, H4a, and H4b were inconsistent with earlier findings in past studies [11]. The relationship between each of PEOU and PU with behavioural intention, H6 and H7 were supported. The relationship between behavioural intention and user resistance behaviour, H8 was supported because there was a negative relationship between behavioural intention and user resistance behaviour. the finding was supportive to H9 about the moderating role of conscientiousness on the relationship between behavioural intention and user resistance behaviour, The negative regression coefficient for the interaction term ($\beta = -0.136, t = 1.993, p < 0.05$) suggests negative relationship between behavioural intention and user resistance behaviour among end-user with a low level of conscientiousness than among end-user with a high level of conscientiousness (i.e. H10 is supported). As can be seen from the plotted lines in Figure 2, the regression slope is steeper among end-user with low level of conscientiousness (estimate slope = 0.20, $p < 0.05$) than among end-user with a high level of conscientiousness (estimate slope = -0.20, $p < 0.05$). Which indicate that when the level of behavioural intention is low, both groups of end-users are more likely to have resistance behaviour to use new technology such as HRIS. However, when the level of behavioural intention is high, end-users with low level of conscientiousness are less likely to have resistance behaviour to use new technology (i.e. HRIS). The finding from the present study is consistent with existing studies [42], [65], [75].

Moreover, we conduct post hoc analyses in terms of effect size test to better understand the results of the structural model validation, this study evaluated the effect size of intention behaviour on the dependent variable user resistance behaviour with moderating effect of conscientiousness. The R^2 when including the moderating effect of conscientiousness is 0.176, resulting in an f^2 of conscientiousness is 0.019. Post-hoc statistical power calculator for multiple regression [43], by adjust number of predictors 2, observed R^2 0.176, Probability level 0.05, and Sample size is 373, the result of observed statistical power is 1.0. Therefore, a higher impact of moderating effect of

conscientiousness as it achieved more than 0.8 which could be examines whether an interaction between intention and resistance behaviour was significant predictor.



Note: ** = $p < 0.01, t\text{-value} > 2.33$ (one-tailed), * = $p < 0.05, t\text{-value} > 1.645$ (one-tailed), ns = not significant.

Fig. 2. Path coefficients after bootstrapping (N = 5000).

IV. CONCLUSIONS

This study contributes to the current knowledge regarding the factors that lead to a successful technology adoption through investigating user resistance behaviour towards using a HRIS, and integrating the most important variables from different theories, namely the TPB, BFF linked with DRTC and TAM [45] into one single model to explain these particular perspectives. The results showed that only routine seeking out of DRTC dimensions was a predictor of PEOU and PU which directly affect behavioural intention, which in turn predicts user resistance behaviour. Also, that PT is good predictors of user resistance behaviour to use new technology [44]. These results will strengthen the body of knowledge in terms of developing models about HRM and IS because the findings confirm that the TAM, DRTC, and PT are very good predictors of end-user resistance to using a new system implementation such as an HRIS.

Practice Implications In light of the findings of this study, it is clear that it is important to minimize the level of resistance by explaining to users that the systems are easy to use, friendlier, and if user did any mistakes it easy to solve it. Moreover, clear introduction and continuous training is the most important ways to avoid any probable resistance in the future.

Moreover, another practical implication of this study result is that some professional questions should be included in job interviews to ascertain individuals' beliefs in order to test their personality toward acceptance change. In addition, managers should note as a matter of importance that there is a link between change and emotions, which in turn have effects on acceptance and perception of change. Therefore, it is necessary at the pre-implementation stage, to create opportunities for employees to purge their emotions.

The limitations that might have affected the findings of this study and may be suggested as a guide for future research. First, it focused on the influence of DRTC on the perception of acceptance to use only one system such as the HRIS in particular sector the healthcare sector. Second, the participants in this study were in the public sector, so the results may not generalize to other sectors. Future studies should explore different systems and multiple sectors.

Third, this study is largely cross-sectional data design so its findings cannot indicate causal relationships between variables [47]. However, it is suggested to test the relationship in longitudinal because the intentions and perceptions of individuals often change with time. Most decisions about HRIS adoption are often made by non-physicians yet the system is used by doctors, nurses, and other medical staff [46]. Also, future studies could incorporate environmental variables such as the nature of the task, complexity of the system, etc. into the model.

V. DISCUSSION

This study shown that the perception of employees about the implementation of an HRIS in healthcare sector is influenced by their routine seeking only of DRTC dimensions. The results showed that employees whose routine seeking is high tend to have a negative perception of change about the implementation of new technologies in the healthcare, and more likely to be opposed to using an HRIS application because they could find using it difficult psychologically [25].

This study also included variables that had not been included in previous researchers in one single model such as PEOU, PU, behaviour intention, user resistance behaviour and conscientiousness from big five of personality traits as a moderator. The success and/or failure of implementing a new technology depends largely on how such resistance is managed [48]. Moreover, based on the literature in the Saudi context, losing comfort zone, status quo, the lack of appropriate skills and competency among public sector may lead employees to increase their resistance towards adopting and using HRIS [4], [76].

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